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Our Forgotten Resource–
The Common Sense Approach

The Final Report of
The Environment Council of Alberta
Task Force on Economic Instruments for
Waste Reduction

September 1994

Cover: CLOVERBAR LANDFILL
Edmonton, Saturday, September 3, 1994

"You wouldn't believe the kind of stuff we used to get... and how much. There's a lot less since the tipping fees were raised."

Landfill Attendant

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Environment Council of Alberta

The Environment Council of Alberta is a provincial Crown Corporation that reports to the Government of Alberta through the Minister of Environmental Protection. The Council's mission is to work toward a sustainable future for Alberta by providing leadership and long-term policy advice on sustainable development to the Alberta government through the Minister of Environmental Protection, based on input from knowledgeable and concerned Albertans.

If you would like:

- more information on the Council or any of its activities;
- additional copies of Our Forgotten Resource – The Common Sense Approach, the Final Report of the Task Force on Economic Instruments for Waste Reduction;
- A computer disk of the text only of Our Forgotten Resource – The Common Sense Approach
  - MicroSoft Word 5.0 for Macintosh, or
  - WordPerfect 5.0 for IBM compatibles;

please contact:

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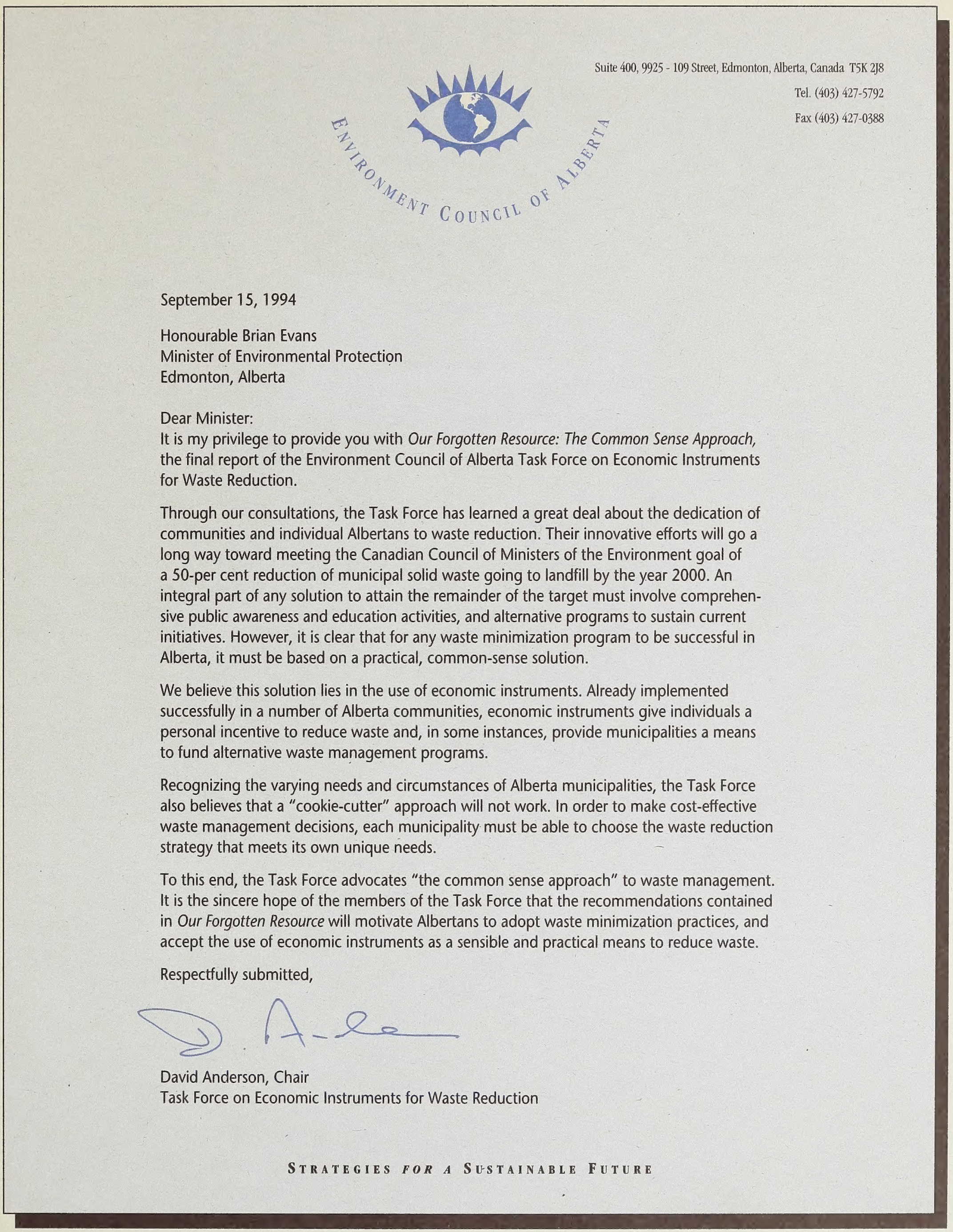

ENVIRONMENT COUNCIL OF ALBERTA

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September 15, 1994

Honourable Brian Evans
Minister of Environmental Protection
Edmonton, Alberta

Dear Minister:

It is my privilege to provide you with *Our Forgotten Resource: The Common Sense Approach,* the final report of the Environment Council of Alberta Task Force on Economic Instruments for Waste Reduction.

Through our consultations, the Task Force has learned a great deal about the dedication of communities and individual Albertans to waste reduction. Their innovative efforts will go a long way toward meeting the Canadian Council of Ministers of the Environment goal of a 50-per cent reduction of municipal solid waste going to landfill by the year 2000. An integral part of any solution to attain the remainder of the target must involve comprehensive public awareness and education activities, and alternative programs to sustain current initiatives. However, it is clear that for any waste minimization program to be successful in Alberta, it must be based on a practical, common-sense solution.

We believe this solution lies in the use of economic instruments. Already implemented successfully in a number of Alberta communities, economic instruments give individuals a personal incentive to reduce waste and, in some instances, provide municipalities a means to fund alternative waste management programs.

Recognizing the varying needs and circumstances of Alberta municipalities, the Task Force also believes that a "cookie-cutter" approach will not work. In order to make cost-effective waste management decisions, each municipality must be able to choose the waste reduction strategy that meets its own unique needs.

To this end, the Task Force advocates "the common sense approach" to waste management. It is the sincere hope of the members of the Task Force that the recommendations contained in *Our Forgotten Resource* will motivate Albertans to adopt waste minimization practices, and accept the use of economic instruments as a sensible and practical means to reduce waste.

Respectfully submitted,

David Anderson, Chair
Task Force on Economic Instruments for Waste Reduction

STRATEGIES *FOR A* SUSTAINABLE FUTURE

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OUR FORGOTTEN RESOURCE

Garbage... rubbish... trash... junk.
By every definition "useless or worthless stuff"— ***waste****. But is it?*

A newspaper once read is discarded. Potato peels and tin cans, milk cartons and plastic grocery bags are thrown out. Children outgrow their clothes and toys. Styles change. The kitchen and bath get remodelled and the appliances and fixtures are replaced. The car gets wrecked and is written off. The old computer isn't fast enough and the data bank isn't big enough. The new computer is triple-packed to protect it from damage. The fourth draft of the management plan hits the waste basket just like the three before it.

"We need practical solutions to motivate Albertans to reduce waste."

The Honourable Brian Evans
Minister, Alberta Environmental Protection

In the day-to-day operation of our households and businesses, there are few commodities that outlive their usefulness.

At the 1992 per capita rate, a two-year-old Albertan already bears the responsibility for generating 1.96 tonnes of waste to the local landfill. That child can be expected to live for more than 80 years and if his or her behaviour and attitude toward waste never change, a legacy of another 78.4 tonnes will have been trashed by the year 2074.

"To compare our cast-offs with those of our ancestors is sobering: In no other civilization has garbage ever been more grand or grandiose – or had more to say about its creators."

Archaeologist William L. Rathje
National Geographic

Thanks to the emergence of the most environmentally-conscious generation in modern times, behaviours and attitudes are changing. The child born in 1992 will likely grow up amid differing circumstances and influences to be more environmentally- responsible than his or her parents. Change is occurring, as evidenced by the decrease in the amount of waste generated per capita from 1.15 tonnes in 1988 to 0.98 tonnes in 1992. Several factors have contributed to increased awareness of the benefits of waste minimization. The economic and environmental impacts of waste disposal have been the subject of considerable public scrutiny.

Each year, more than two million tonnes of waste must be collected, sorted and disposed of by Alberta's municipal waste management authorities. When all costs are considered province-wide, the annual bill for waste handling is estimated to be as high as half a billion dollars. Municipalities are looking for ways to reduce and offset these costs.

The environment also bears the cost of our consumption. As landfills reach their capacity, it is becoming increasingly difficult to find new sites that are environmentally appropriate, as well as acceptable to nearby residents. Environmental regulations, associated with managing waste, have become more stringent as we have learned more about the harm that can be done to the eco-system through improper management.

Since the early 1980s, recycling has grown steadily in popularity. Originally, it was a "feel good" way of taking personal action to protect the environment. Indeed, "recycling" was not even a word in the 1983 edition of the Gage Canadian Dictionary. Interest in recycling is reportedly spurred by a range of concerns: loss of landfill space, contamination of groundwater by landfills, dwindling natural resources, and, perhaps, a growing comprehension of our unmatched squandering.[1]

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[1] National Geographic, July 1994

Supported by a variety of programs to accommodate recycling initiatives, it is now encouraged by waste management authorities more as a means of reducing the amount of waste going to landfill.

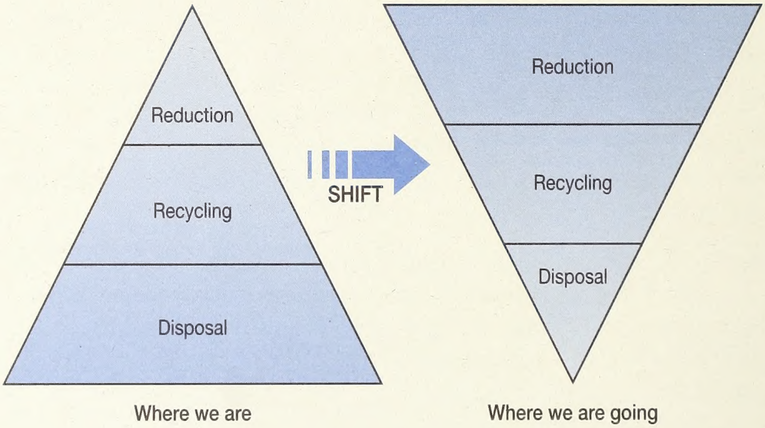
The Government of Alberta is committed to two goals that demand we take greater individual and collective responsibility for our waste: the Alberta Round Table on Environment and Economy's Vision of Sustainable Development, and the Canadian Council of Ministers of the Environment – CCME – goal of a 50-per cent reduction in municipal solid waste going to landfills by the year 2000.

> **"Alberta, a member of the global community, is a leader in sustainable development, ensuring a healthy environment, a healthy economy, and a high quality of life in the present and the future."**
>
> Alberta's Vision of Sustainable Development, unanimously endorsed by the Legislature, June 1992

Municipal solid waste, as defined by the CCME, refers to any material, product, or by-product for which the generator has no further use and which is discarded for management at waste disposal facilities. For purposes of this report, municipal solid waste includes durable goods, non-durable goods, containers and packaging, food and yard wastes and miscellaneous organic wastes from residential, and industrial, commercial and institutional sources; as well as debris from the construction and demolition of buildings, roads and bridges.

It is envisioned that Alberta's goals can only be achieved through a significant shift in emphasis among various stakeholders — waste managers and administrators, consumers, and manufacturers.

CHANGING EMPHASIS



More and more environmental policies are being implemented that stress waste reduction as a means of resource conservation. To encourage behaviours that focus on generating less waste, economic instruments — fees, charges and incentives — are being introduced as market-based tools that will ultimately encompass the "4Rs" philosophy.

> **"The solution to the waste problem lies in changing behaviours, acting sustainably, and investing in 'green' technologies and practices, while, at the same time, remaining competitive – a neat trick if we can pull it off."**
>
> Robert J. Redhead,
> Director, Government Relations
> Laidlaw Inc.

The 4Rs — reduce, re-use, recycle and recover — are important principles to consider in planning a waste management strategy. Presented in order of their importance to the realization of greater reduction of solid waste, the 4Rs are defined as:

- **Reduce** — Reduction results in less waste being generated prior to any reuse or recycling activities. Waste reduction can occur as a result of purchasing decision or "on-site" activities.
- **Re-use** — Re-using a product or package in its original form for its original purpose or a different purpose.
- **Recycle** — Collecting used material and reprocessing it into a usable product. Materials can be recycled back into their original use or into other products.
- **Recover** — Extracting usable energy from residual waste materials.

Source: Municipal Planning Guide; Alberta Action on Waste, 1993

> **"User charges for waste collection and disposal are fundamental to efficient management of wastes and the meeting of waste reduction objectives."**
>
> Economic Instruments for
> Environmental Protection,
> Discussion Paper,
> Canada's Green Plan

In the context of this report, economic instruments are various mechanisms which create financial incentives for waste generators — whether consumers, companies or governments—to encourage waste reduction. Some municipalities have started charging consumers directly for waste collection based on the volume discarded. These programs are not intended to punish the generators for creating waste, but to encourage sensible and responsible behaviour. They also put more focus on waste management practices and encourage more efficient systems for collecting, handling and disposal. Everyone is more accountable — an idea whose time has come.

Although they are often discussed as an alternative to regulation, economic instruments may require some legislation and regulations for their creation. In fact, economic instruments have the potential to encourage more scope for individual and corporate initiative than those being regulated in the traditional way — and even can be designed to provide financial rewards for those who exceed the minimum standards. Economic instruments are intended to reduce the overall cost of waste management services, including alternatives to disposal in landfills.

Waste reduction is part of a much wider debate concerning waste management, environmental pollution and the use of resources. Market and legislative awareness of the environmental impacts of products, production processes, packaging and disposal has grown.

In fact, the Spring 1994 Environics[1] survey found that Canadians believe waste management is the most pressing issue for municipalities. Thirty-five per cent cited it as their number one concern. Albertans were among those most concerned — but, they are evenly split between reducing waste and finding better ways of disposing of it.

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[1] Source: Enviroline, May 1994

This report is about reducing the amount of waste that Albertans generate. Moreover, this report is about economic instruments that will serve as incentives to reduce waste. It has been prepared by 12 knowledgeable and interested Albertans who were asked to explore ways to accomplish waste reduction. While supportive of innovative disposal and treatment facilities that protect public health and the environment, they did not critically review waste treatment systems per se. However, in order to put their recommendations regarding economic instruments and related matters into the proper context, they did consider other factors within the waste management structure. There are many benefits from reducing waste:

- opportunities for businesses to expand markets where environmental impacts of products and their manufacture are increasingly important, and for firms to remain in the markets where rising environmental standards are being demanded by consumers;
- reduced demand for natural resources, and savings in resource extraction;
- the use of recycled or recyclable materials may result in lower raw materials costs;
- waste generators can lower their net costs;
- decreased landfill or other disposal costs;
- less pollution such as litter and leachate from landfilling; and
- conservation of the environment for current and future generations in keeping with the principles of sustainable development.

The advantages of reducing waste to a local economy are:

- extending the life of a landfill is cheaper and easier than building a new one;
- reduction in landfill and other disposal costs;
- added efficiency in waste disposal has potential to attract investment;
- new opportunities for income, investment and employment in collecting and reprocessing recyclable material, developing clean technologies and improving processes to limit wastes;
- improvements in the local environment; and
- opportunities for businesses to develop their products and/or their production processes to meet increasingly environmentally aware markets.

Alberta's economic prosperity is resource-based. The Albertans who prepared this report believe waste is *our forgotten resource*. Whatever our achievement at source reduction — a worthwhile and necessary objective — waste cannot be totally eliminated. Some of what remains must be considered a re-usable, renewable resource — an opportunity to realize economic, environmental and social benefits. If components of our waste stream become a natural part of our economy, then the responsible disposal of those wastes will become a normal part of our lifestyle.

> **"I interpret the Classic period of the ancient Maya civilization as one of profligate waste, followed by a period of decline. The Maya woke up and discovered resources were in short supply, and they became very efficient very fast – they recycled, they reused. But it was too late.**
>
> **"If we compare our garbage with theirs, I think we can see we're still in the classic phase; that is, we're still discarding tremendous amounts of valuable resources on a daily basis... We can go into a period of efficiency and pragmatism, and in that way sustain our society in the style to which we've become accustomed for a much longer time."**
>
> Archaeologist William L. Rathje
> in National Geographic

THE PROJECT

The Environment Council of Alberta, a provincial Crown corporation, reports to the Minister of Alberta Environmental Protection. The Council established the Task Force on Economic Instruments for Waste Reduction to advise the Government of Alberta, through the Minister, on specific ways Alberta could meet the Canadian Council of Ministers of the Environment goal. Led by a 12-member task force, a process was designed to encourage Albertans to identify issues, concerns and ideas that relate to the implementation of economic instruments to reduce waste.

> **"People will have to be educated in order to re-adjust how they view the environment as an economic commodity."**
>
> Workshop Participant

The Task Force members (see Appendix 1) and the stakeholder organizations they represent are:

- Chairman David Anderson, Environment Council of Alberta, Edmonton;
- Lynne Arling, Consumers' Association of Canada (Alberta), Edmonton;
- Cheryl Croucher, Environmental Consultant/Writer, Edmonton (member since May 1994);
- Bob Gillis, Banff Recycling Society, Banff (member until April 1994);
- Bob Grbavac, Health Unit Association of Alberta, Raymond;
- Cecil Griffith, Rural & Improvement Districts Association of Alberta, Goodridge;
- Patricia Mackenzie, Alberta Urban Municipalities Association, Edmonton;
- Dennis Merrell, Alberta Weekly Newspapers Association, Edmonton;
- Michael O'Connell, Recycling Council of Alberta, Calgary;
- Tom Thackeray, Alberta Chamber of Commerce, St. Albert;
- Bryan Walton, Canadian Council of Grocery Distributors, Calgary;
- Bruce Willerton, Alberta Association of Municipal Districts and Counties, Wainwright; and
- Gary Willson, Environmental Services Association of Alberta, Calgary.

The Task Force was assisted throughout its deliberations by:

- Jim Rivait, Project Director, Environment Council of Alberta; and
- Dr. Bruce Taylor, Director, Action on Waste, Alberta Environmental Protection.

Environment Council staff served as the secretariat to the Task Force. In addition, a working group was formed to provide technical information and assistance; and included officials from the provincial departments of Municipal Affairs, Economic Development and Tourism, Environmental Protection, Health and Treasury; the City of Edmonton Public Works; Environment Canada; and Laidlaw Waste Systems. (See Appendix 1)

> **"...need to keep in mind the economic components, not just the environmental ones."**
>
> Participant, Red Deer Workshop

The project was created to help Albertans understand the current waste management challenges as they relate to the 50-per cent reduction in the amount of waste going to landfill by the year 2000. Its primary objectives were to:

- increase public and government understanding of the total or "real" costs of waste;
- obtain public input in the identification, review and prioritization of policy options for the use of economic instruments by the provincial and municipal governments;
- explore how fees, charges and incentives would work in different Alberta jurisdictions, recognizing regional diversity;
- learn more about the various waste commodities which are unique in their own right and as a result, require different management and reduction mechanisms;
- serve as a catalyst for information-sharing between jurisdictions; and
- focus on how governments can support more effective waste reduction when faced with new fiscal realities and constraints.

"In learning about (economic) instruments implemented by others in... Alberta, we've now got a more focused idea of what to do next and what we can do next."

Participant, Red Deer Workshop

The findings of the Task Force will be presented to the Minister of Alberta Environmental Protection, and widely distributed to all cities, towns, municipalities and counties in Alberta, waste systems managers, workshop participants and other stakeholders, including the general public.

THE PROCESS

Active since October 1993, the Task Force met regularly to learn more about economic instruments and the Alberta waste management situation. Initially, members familiarized themselves with the issues involved in waste management and the use of economic instruments. Presentations on economic instruments, the recycling industry, the cost of waste, the Canadian Industry Packaging Stewardship Initiative, and the need for an overall strategy were made to the Task Force. (See Appendix 2.)

"It would be nice to actually see this kind of valuable information put to use at a level that can make a difference."

Participant,
Grande Prairie Workshop

Stemming from these sessions, a discussion paper was developed to outline potential economic instruments as they apply to waste management issues in Alberta. The paper was released in February 1994, and formed the background for public consultation and feedback.

Regional workshops were held to enable the Task Force members to meet directly with local waste managers, environmental groups and industry. The mayor of every city, town and village, the reeve of every county and municipal district, and the chairperson of every improvement district or special area in the province was contacted. They were asked to identify local individuals who were involved in waste management and reduction initiatives. These individuals, along with the mayors, reeves and chairpersons, were then sent the discussion paper and accompanying worksheets, and an invitation to participate in the workshop in their area.

PROJECT PROCESS

TASK FORCE ESTABLISHMENT – October 1993

stakeholder representatives appointed

- *to establish terms of reference for discussion paper*
- *to steer development of discussion paper*

ISSUE REVIEW SESSION

presentations by

- *industry, academics & interest groups*

DISCUSSION PAPER – February 1994

- *need for new approaches*
- *linkage to other initiatives*
- *known alternatives for economic incentives*
- *limitations of economic instruments*
- *implications of economic instruments to be considered*

NINE WORKSHOPS – March 1994

- *multi-disciplinary, multi-regional and multi-interest workshops*
- *industry groups*
- *environmental NGOs*
- *other governments*

SUMMARIZATION OF RESPONSES

- *workshops*
- *other responses to discussion paper*

REVIEW BY TASK FORCE

- *to develop recommendations based on research and response to discussion paper, workshops and consultations*

REPORT PREPARATION

STAKEHOLDER CONSULTATIONS

- *consulting with industry and academics*

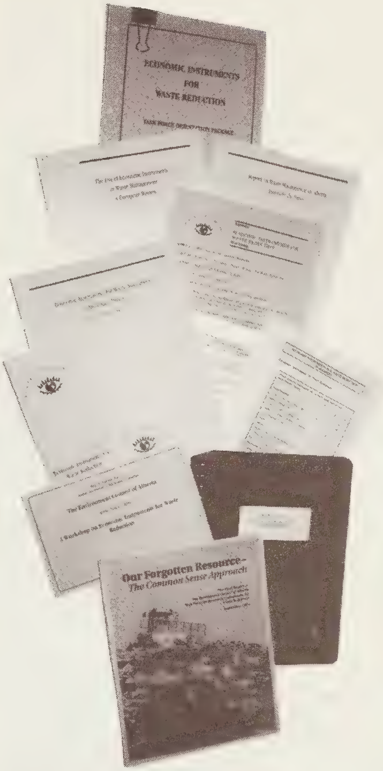
REVIEW BY TASK FORCE

TASK FORCE REPORT – September 1994

- *to Minister of Alberta Environmental Protection, municipalities, waste managers, workshop participants, other governments, general public and media*

MONITORING AND REVIEW – September 1995

- *survey of municipalities*


ECONOMIC INSTRUMENTS FOR WASTE REDUCTION
The Environment Council of Alberta
A Workshop on Economic Instruments for Waste Reduction
Our Forgotten Resource – The Common Sense Approach

Throughout March 1994, workshops were held in Wainwright, Edmonton, Grande Prairie, Hinton, Red Deer, Coaldale, Airdrie and Fort McMurray. In each location, participants discussed economic instruments for waste reduction, identified related regional activities, and addressed the potential for using economic instruments in the region. Participants also looked at barriers to implementing economic instruments and ways to overcome these barriers.

A total of 231 Albertans attended the workshops (see Appendix 3). A complete report of the workshops was prepared and is available for review upon request to the Environment Council of Alberta. According to participants, the process was worthwhile from three perspectives:

- it allowed people to become familiar with the concept of economic instruments for waste reduction;
- it provided a forum to exchange ideas on waste reduction initiatives that are currently taking place in their regions or communities; and
- it allowed people with a common interest to work together.

Following the workshops, Task Force members expressed a desire to learn more about the impact the use of economic instruments would have on industry. A focus group — comprised of representatives of the paper, cardboard, construction and newsprint industries; public institution administrators, building managers and academics with environmental expertise — met with the Task Force and working group. A Task Force delegation also travelled to Winnipeg to learn more about the Canadian Industry Packaging Stewardship Initiative (CIPSI). The Manitoba Government has been the only jurisdiction in Canada to adopt the model, so Task Force members learned more about the provincial, municipal and industry experience with the program first-hand.

Alberta Craft Council Show

In addition, numerous reports, documents, promotional materials and media clippings were reviewed by Task Force members and the working group. Waste reduction programs and economic instruments in the rest of Canada, the United States and Europe were discussed for applicability in Alberta. Administrators of waste management services should refer to the "Resource Materials" listing contained in Appendix 4 which references the documents the Task Force found most relevant and useful.

Taking into consideration all of this information, the Task Force developed its recommendations. Throughout the process, the importance of community groups, business and local government to waste minimization initiatives became very clear. As a result, the majority of recommendations are directed at both the provincial and municipal levels of government, and at waste management authorities.

THE REPORT

Our Forgotten Resource — The Common Sense Approach is not aimed at the casual reader. It is intended to be used by waste managers, municipal politicians and administrators, industry representatives and anyone with an interest in waste reduction. Through public consultation, people involved in waste management and waste minimization programs throughout Alberta described to the Task Force how economic instruments can be applied to their regional circumstances, some of the barriers that might be encountered, and how to overcome those barriers. Their comments are reflected throughout this report.

The Task Force stresses the need for coordinated and comprehensive public education and awareness programs. The recurrent theme emerging from all the workshops was the importance of educating the public about the need for and benefits of waste reduction, and the costs of waste disposal. It was generally agreed by participants that involvement at all levels of the community — government, business, organizations and individuals — is needed to reduce waste. Although education programs should be geared toward the specific needs and circumstances of particular sectors, cooperation and interaction between groups is recommended as more efficient and cost-effective.

> **"To develop a sense of community responsibility all sectors need to cooperate and be actively involved in reducing waste."**
>
> Golder Report

The most successful waste reduction campaigns have been those launched in concert with public awareness initiatives, and included community members in their design. Particular attention will have to be paid to methods of involving the print and broadcast media in disseminating information.

While the need for achievement of reduction practices is universal, it is acknowledged that promotional activities aimed at changing behaviours will differ between urban and rural settings, and among sectors of society.

The Task Force identified seven major issues with broad implications for waste reduction, and formulated 50 recommendations to address those issues. In doing so, members became acutely aware of how interrelated and interdependent the systems and processes directing waste management can be. They firmly believe it is in our best interests — both economically and environmentally — to concentrate on creative measures to reduce our waste, rather than on paying the ever-increasing bills for disposing of it. When it comes to waste, an ounce of prevention really is better than a pound of cure.

For the most part, the Task Force recommendations are general in nature, and can be applied to many areas in Alberta. The "directions for implementation" are more specific, and provide suggestions and examples that can bring the recommendations to life. The appropriateness of these directions will require extensive discussion and further investigation by those responsible for implementing waste reduction strategies. The legal implications and jurisdictional responsibilities of each recommendation are contained in Appendix 5.

> **"Make people pay for the service they get."**
>
> Participant, Focus Group Session

THE ISSUES AND RECOMMENDATIONS

The issues examined and the recommendations presented by the Task Force are:

- **Issue 1 - Achieving the 50-Per Cent Goal**
  Alberta is committed to the Canadian Council of Ministers of the Environment target of reducing the amount of municipal solid waste going to landfill by 50 per cent by the year 2000. The Task Force strongly supports that commitment and recommends that Alberta adopt interim targets; that the rationale for the target be clearly communicated and supported by an education strategy; and that Action on Waste take the lead role in working with regional, municipal and business stakeholders and the public.

- **Issue 2 - Components of the Waste Stream**
  There is demonstrable need for providing information that creates greater public awareness of the composition and sources of the waste stream. The efforts and dollars expended by governments, industry and the public on any one material must be directly related to that material's contribution to the total waste stream. Furthermore, source reduction is still seen as the best option — if you don't create it, you don't have to dispose of it.

- **Issue 3 - Regional Differences and the Need for Full-Cost Accounting**
  It was evident throughout the public workshops that the varying circumstances in Alberta's 378 municipalities pose a great challenge. What works in Calgary won't necessarily work in Wainwright, and vice versa. No matter what waste management system is used, it has to make economic sense. To make economically-sound choices, the real cost of waste management options must be understood by waste managers and the public alike. There is a need for developing a mechanism with broad application to facilitate full-cost accounting procedures and practices within and among regions.

- **Issue 4 - User-pay Initiatives**
  Even though Albertans enjoy the lowest taxes in Canada, they appear to be unwilling to absorb any additional tax burden. This has led to a greater acceptance of a pay as you go, or user-pay, approach. As taxpayers feel the squeeze, there is recognition that those who benefit from a program or service must pay the cost.

  In cases where municipalities employ user fees to pay for existing services, taxpayers must see those costs offset by similar reductions in property taxes. Citizens are sensitive to anything that may be considered a "tax grab".

As user fees, variable curbside rates are considered one of the most effective tools for reducing waste. They direct the instrument at the individual, where action can be taken on a personal level to not only reduce waste, but also to reduce personal costs.

Tipping fees are considered to have a lesser impact on individuals, but are seen as an effective means to recover the full costs of landfilling.

- **Issue 5 - Reduction through Recycling — The Economics and the Markets**
  The importance of recycling was one of the major themes heard throughout the workshops. But, at the same time, the Task Force also heard that if there is no market for the commodity, then it should not be collected. Rural communities in particular would benefit from cooperative efforts to achieve economies of scale and reduce costs. Non-financial assistance should be provided to identify business development opportunities. Waste diversion credits and advance disposal fees can provide funding for research and development, as well as contribute to the economic viability of recycling programs.

- **Issue 6 - Product Stewardship**
  With the public becoming more aware of waste management issues, the need for "cradle-to-grave" policies becomes more apparent. Individual purchasing practices and corporate procurement policies can have a significant effect on manufacturer sensitivity to both product and packaging issues. Manufacturers must respond by establishing industry-wide standards that address these concerns. If industry does not act, governments and other regulatory agencies must consider the applicability of regulations that require compliance with product stewardship principles.

- **Issue 7 - Jurisdictional Responsibility for Waste Management Systems**
  Alberta's waste management systems are as diverse as the responsibilities for managing waste. The move toward regional landfill systems will help ensure a level of consistency for waste management services throughout the province and it will hasten the closure of environmentally-risky, uncontrolled sites. Concern for the health of the public must remain the highest priority.

OBSERVATIONS AND ACKNOWLEDGEMENTS

According to *The Economist*, "decisions about waste management take place in a statistical vacuum".[1] While not entirely true, the Task Force admits to a certain level of frustration and difficulty in finding sufficient and consistent data to support some of its commentary. In addition to lack of information on both tonnage and volume for the components of the total waste stream, what counts as waste varies among jurisdictions and within reference materials.

"People who actively work at waste reduction, be it grass roots recycle groups or environmental groups, have experience that is worth tapping into."

Participant, Grande Prairie Workshop

It is hoped that this report will become the definitive document for use in Alberta in its quest toward the 50-per cent reduction goal. The figures estimated for 1988, 1991 and 1992 are considered the best available and should be used as the benchmark for measuring waste minimization practices. It would serve both the provincial and municipal governments well to adopt consistent measurements and definitions, as recommended. (See Appendix 6.)

The Task Force was very impressed with the number of activities underway in the province — and the success many communities have had in launching programs and applying economic instruments. The creativity and energy shown in numerous communities reinforced the members' view that Albertans are always ready to accept a challenge. By the same token, the spirit of entrepreneurship is being applied in many ways as private sector companies accept the challenge and opportunity presented by the waste management industry. It would be impossible to mention each individual or firm separately. Instead, examples are cited throughout the discussions surrounding the seven issues, others are highlighted in the margins.

"The town of under 2,000 people collects cardboard, paper and glass... Labour within the recycling centre is provided by local volunteers, most of whom are senior citizens... Rimbey's recycling volunteers are still going strong, 10 years later."

Christina Seidel
Environmental Consultant

The tradition of volunteerism is part of the social fabric of Alberta. It is a strong component of the recycling industry in communities throughout the province, particularly in rural areas. Volunteers and not-for-profit organizations are to be applauded for their efforts and achievements in collecting, handling and marketing recyclables. On more than one occasion, however, the Task Force heard of incidents of "burn out" among volunteers who, in many communities, bear the total responsibility for organizing these activities.

goodwill
What will I do with all this?

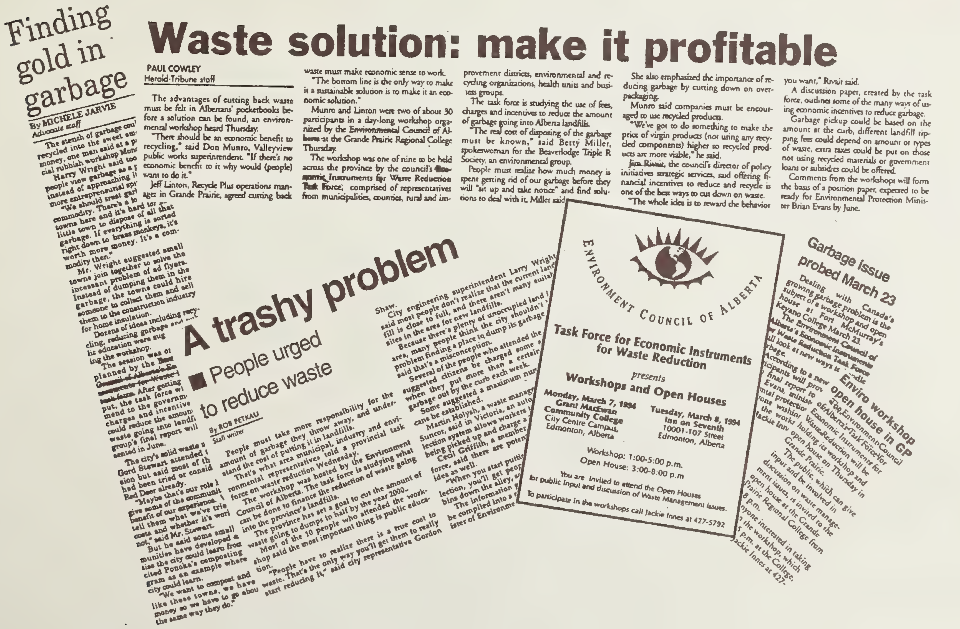
---

[1] A Survey of Waste and the Environment, May 29, 1993

In its discussion of reduction through recycling, the Task Force does not mention the phenomena of garage sales, yard sales and flea markets. Because these activities are not driven by organized waste minimization programs, they were not formally reviewed. Nonetheless, these sales of personal goods for re-use by someone else have had an impact on reducing the amount of material placed at curbside or hauled directly to landfill.

It appears logical that wanting some financial return for unwanted goods is closely linked to economic factors that influence behaviours. For instance, people who lived through the Great Depression of the 1930s and then entered the War Years learned to make do with less. Re-using was a way of life. Hand-me-downs and chipped plates eventually went to the rummage sale in the church basement. Many of their children — the War Babies — grew up with the same attitudes to conserve. Even the well-to-do were not wasteful.
It was the Baby Boomers who became known as the disposable society. Manufacturers indulged their excesses and affluence with throw-away products, from paper bikinis to ballpoint pens. But the extreme economic downturn of the late 1970s and early 1980s — from which Alberta has not yet fully recovered — changed even their attitudes. Perhaps the War Babies and their parents saw an opportunity through garage sales to earn extra cash. Regardless of who first turned a garage into a showroom, such sales have become popular enough during the past 15 years that they are an effective incentive… for Baby Boomers, Yuppies and, hopefully, their children. As a society, we will be well-served by adopting a conserver ethic and avoiding a throw-away mentality.

The Task Force wishes to thank the workshop and focus group participants for their invaluable input (see Appendix 1 and 3). This level of input to the dialogue surrounding economic instruments for waste reduction is one of the aspects that sets this report apart from others. The commentary and insights of these Albertans are reflected in each and every one of the recommendations that is made in *Our Forgotten Resource — The Common Sense Approach.*



Finding gold in garbage

By MICHELE JARVIE
Advocate staff

Waste solution: make it profitable

PAUL COWLEY
Herald-Tribune staff

The advantages of cutting back waste must be felt in Albertans' pocketbooks before a solution can be found, an environmental workshop heard Thursday.

"There should be an economic benefit to recycling," said Don Munro, Valleyview public works superintendent. "If there's no economic benefit to it why would (people) want to do it."

Jeff Linton, Recycle Plus operations manager in Grande Prairie, agreed cutting back waste must make economic sense to work.

"The bottom line is the only way to make it a sustainable solution is to make it an economic solution."

Munro and Linton were two of about 30 participants in a day-long workshop organized by the Environmental Council of Alberta at the Grande Prairie Regional College Thursday.

The workshop was one of nine to be held across the province by the council's Economic Instruments for Waste Reduction Task Force, comprised of representatives from municipalities, counties, rural and improvement districts, environmental and recycling organizations, health units and business groups.

The task force is studying the use of fees, charges and incentives to reduce the amount of garbage going into Alberta landfills.

"The real cost of disposing of the garbage must be known," said Betty Miller, spokeswoman for the Beaverlodge Triple R Society, an environmental group.

People must realize how much money is spent getting rid of our garbage before they will "sit up and take notice" and find solutions to deal with it, Miller said.

She also emphasized the importance of reducing garbage by cutting down on over-packaging.

Munro said companies must be encouraged to use recycled products.

"We've got to do something to make the price of virgin products (not using any recycled components) higher so recycled products are more viable," he said.

Jim Rivait, the council's director of policy initiatives strategic services, said offering financial incentives to reduce and recycle is one of the best ways to cut down on waste.

"The whole idea is to reward the behavior you want," Rivait said.

A discussion paper, created by the task force, outlines some of the many ways of using economic incentives to reduce garbage.

Garbage pickup could be based on the amount at the curb, different landfill tipping fees could depend on amount or types of waste, extra taxes could be put on those not using recycled materials or government loans or subsidies could be offered.

Comments from the workshops will form the basis of a position paper, expected to be ready for Environmental Protection Minister Brian Evans by June.

A trashy problem

■ People urged to reduce waste

By ROB PETKAU
Staff writer

People must take more responsibility for the amount of garbage they throw away, and understand the cost of putting it in landfills.

That's what area municipal, industry and environmental representatives told a provincial task force on waste reduction Wednesday.

The workshop was hosted by the Environment Council of Alberta. The task force is studying what can be done to finance the reduction of waste going into the province's landfills.

The province has set a goal to cut the amount of waste going to dumps in half by the year 2000.

Most of the 10 people who attended the workshop said the most important thing is public education.

"People have to realize there is a true cost to waste. That's the only way you'll get them to really start reducing it," said city representative Gordon Shaw.

ENVIRONMENT COUNCIL OF ALBERTA

Task Force for Economic Instruments for Waste Reduction

presents

Workshops and Open Houses

Monday, March 7, 1994
Grant MacEwan
Community College
City Centre Campus,
Edmonton, Alberta

Tuesday, March 8, 1994
Inn on Seventh
10001-107 Street
Edmonton, Alberta

Workshop: 1:00-5:00 p.m.
Open House: 3:00-8:00 p.m

You are invited to attend the Open Houses for public input and discussion of Waste Management issues.

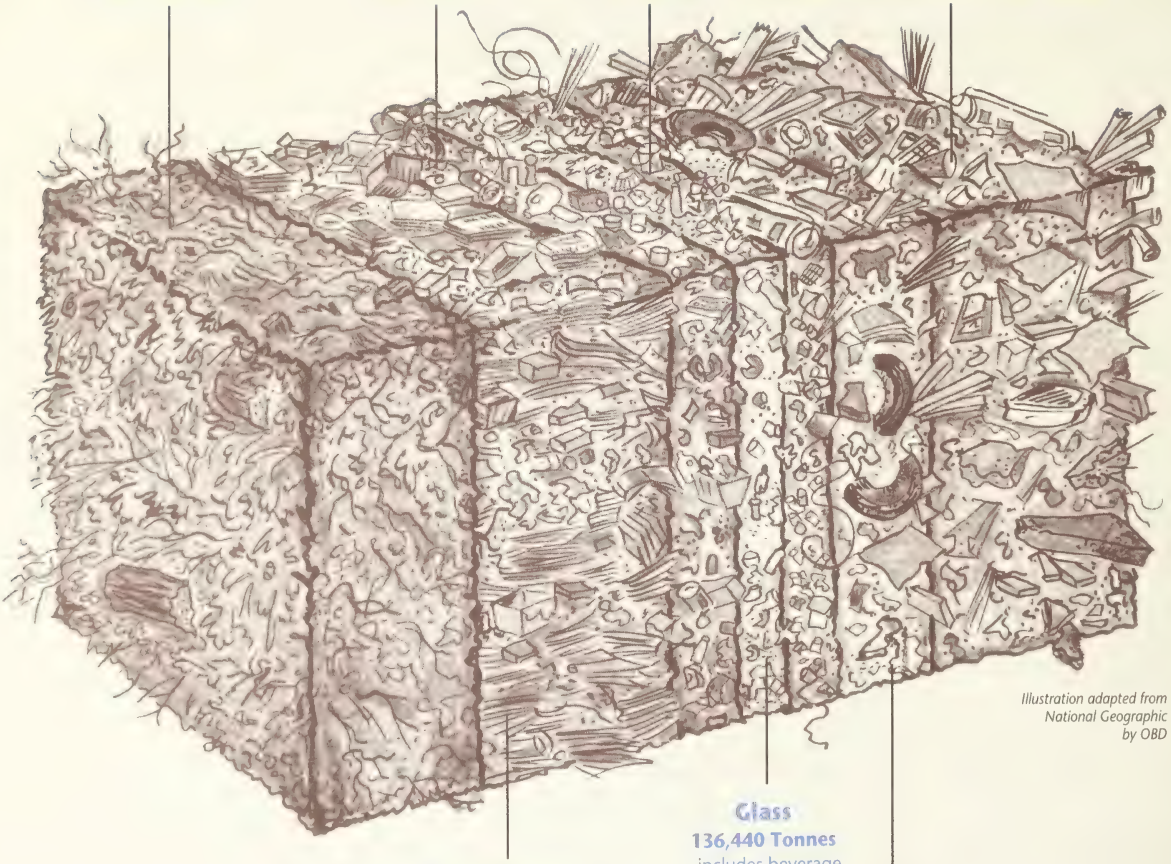
To participate in the workshops call Jackie Innes at 427-5792

Garbage issue probed March 23

Dealing with Canada's growing garbage problem is the subject of a workshop and open house at Fort McMurray's Keyano College March 23.

Enviro workshop open house in GP

ALBERTA WASTE STREAM*



Organics
300,970 Tonnes
- includes food scraps, yard waste, plants and some wood

Plastics
156,500 Tonnes
- includes drink bottles, milk jugs, packaging materials, shopping and garbage bags, polystyrene foam, plastic products

Metal
170,540 Tonnes
- includes ferrous and non-ferrous metals: vehicle parts, machinery, tools and appliances, other industrial and household products, as well as aluminum and steel cans for food and beverages

Construction/Demolition Materials
741,540 Tonnes
- includes all materials from buildings, roads and bridges: brick, concrete and asphalt, wood and lumber products, drywall, tiles, insulation, electrical and plumbing materials, steel reinforcing products and fasteners

Illustration adapted from National Geographic by OBD

Glass
136,440 Tonnes
- includes beverage containers, food containers, cosmetic jars, glassware, windshields, other glass products

Paper Products and Newsprint
642,080 Tonnes
- includes newspapers, magazines and flyers; plus printing and writing paper, container board, box board, special packaging, tissue/special writing paper

Inerts and Other Materials
300,970 Tonnes
- includes wood and wood products, rubber, leather, textiles, some concrete and asphalt materials, furniture

* Based on specific components of residential and ICI waste comprising 73% of the waste stream, separate from construction and demolition materials comprising 27% of the waste stream; 1991 statistics (see pages 20 & 21).

ACHIEVING THE 50-PER CENT GOAL

ISSUE 1

The Government of Alberta is committed to the Canadian Council of Ministers of the Environment goal for the year 2000 of a 50-per cent reduction — from the 1988 levels — in municipal solid waste going to landfill.

While the benefits of meeting the reduction target are obvious, there are a number of questions that have been raised surrounding the commitment.

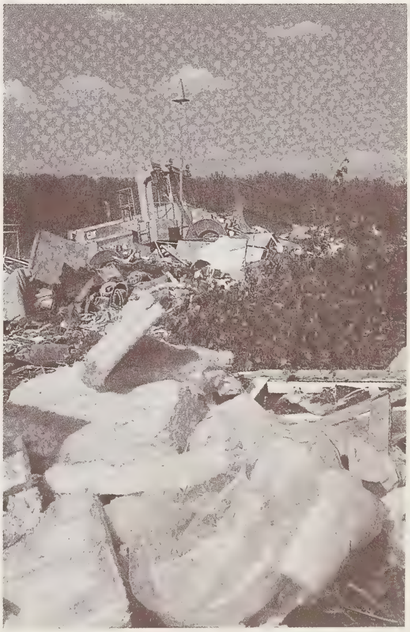
Do we know what the 1988 levels were — both provincially and in each municipality? Not really. It is difficult to accurately state how much waste was and is being generated because so many jurisdictions do not keep records. Nonetheless, based on information available from various sources, the amount of landfilled waste generated by 2.389 million Albertans* was estimated at 2.747 million tonnes in 1988, the equivalent of 1.15 tonnes per capita** or 3.14 kilograms per day.

Are the municipalities clear on whether they should be measuring volume or tonnage? The majority of landfills charge tipping fees based on tonnage, not volume. In recognition of the existing infrastructure and available data, the CCME has confirmed it will measure landfilled waste by *tonnage*, which will be calculated on a per capita basis to allow for population increases. However, this decision is not well-understood by municipalities.

> **"We need a good measurement of waste and a clearer definition of what is garbage and what is recyclable. For instance, what does 50 per cent reduction really mean?"**
>
> Participant, Edmonton Workshop

Is the target reasonable and achievable? While having a specific target makes sense, it may cause frustration within the communities that expend extraordinary efforts and resources in their attempts to reach the goal, but may have difficulty reaching it. For instance, Seattle has been applauded as one of the most aggressive recycling municipalities in North America and is looked upon as exemplary in its achievement. After more than 10 years of concentrated effort, Seattle has managed a standard that is envied by most communities — a 45-per cent reduction. Despite its innovative programs and stringent policies, however, the 50-per cent reduction has remained elusive. That is the legislated target set for Washington in 1995 which Seattle remains determined to reach.

Perhaps the most successful program is underway in New Jersey where the full spectrum of waste stream materials and sources is included in its Solid Waste Management State Plan. Using 1991-based statistics, 52 per cent of the total waste stream is now being recycled while export to out-of-state facilities has dropped to 18 per cent. At the current rate, New Jersey expects to achieve 50 per cent municipal and 60 per cent total waste stream reduction and recycling rates by the end of 1995 — and to have a self-sufficient system. So it can be done, but not without enthusiastic support from the public and dedication by all levels of government and the private sector. Furthermore, when alternative programs are in place to divert waste from landfill, both tonnage and volume are reduced.



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* Source: Statistics Canada

** Source: Alberta Environmental Protection; based on 80 per cent of Alberta'a population; 20 per cent of the population uses landfills that have no scales or use private contractors who do not report this information

How much are people willing to pay to meet the 50-per cent goal? By and large, the general public has little knowledge of the the CCME waste reduction target, the rationale for setting the target, or the real cost of waste disposal. Consequently, suggestions of economic instruments to reduce the amount of waste going to landfill and to recover the cost of alternative programs are met with resistance.

Programs such as "blue box" recycling, beverage container return depots, curbside newspaper collection, community composting, and multi-product recycling stations are not without cost. For example, the City of Edmonton deals with the residential waste stream only, and is exploring alternatives to help achieve 50-per cent reduction. Among them are a materials recovery facility – MRF – and a major composting facility, price-tagged at $30 million. Expansion to other waste management measures is conservatively estimated at double the amount the City is spending now.

"Make sure the public knows that economic instruments aren't new. In the past, we subsidized development by accepting damage to the environment... These instruments change the place where the charge is placed."

Focus Group Participant

In May 1994, the Greater Vancouver Regional District, which currently recycles less than 30 per cent of its waste, gave approval in principle to an ambitious program aimed at the 50-per cent target for households, businesses and industries. Greater emphasis will be placed on backyard composting and curbside collection of yard waste, expansion of recycling services and types, waste reduction and source separation, and eliminating problem materials. Higher user fees, including increased tipping fees, will be charged to offset the estimated $230 million in program implementation costs.

"It became apparent that there is no single set of economic instruments that fits all circumstances. They must be tailored to varying regional parameters and used with non-economic measures such as voluntary recycling depots."

Participant, Edmonton Workshop

It is widely accepted that there is no magic formula that will address the diverse needs and circumstances throughout the province. Economic instruments must be identified to suit regional differences. In this regard, municipalities would be wise to draw on experiences in other communities, and implement the most successful programs under comparable circumstances.

Other questions arise: ***What does the 50-per cent reduction refer to? Is it the total waste stream, including residential, construction and demolition, and ICI — industrial/commercial/institutional? Or is it just the residential waste stream controlled by municipalities? Have specific targets been set for various components of the waste stream which collectively will comprise 50 per cent?***

These questions – and the costs associated with waste minimization programs – seem to be left to the municipalities. Many municipal councils are concerned that meeting the target will be an expensive proposition, and are reluctant to raise taxes to do it. Furthermore, because the target is not a legislated requirement, municipalities have no obligation to meet it. Nonetheless, considerable interest and effort are being devoted toward identifying alternate waste management systems – target, or not.

It is interesting to note that in the United States, 44 states have established recycling and reduction goals ranging from 20 per cent to 70 per cent, with deadlines between 1991 and 2010. Of these, 37 have legislated their targets. Experience indicates that people take recycling and reduction more seriously when there is a legislated requirement to conform.

In Canada, Ontario's new *Waste Management Act* introduced mandatory reduction, re-use and recycling activities which will affect close to 70,000 industrial, commercial and institutional entities. Regulations require the completion of waste or packaging audits and reduction workplans. Some municipalities will be required to provide "blue box" programs and home composting or yard waste collection, depending on population. Certain manufacturers, businesses and buildings, and construction/demolition projects must implement source separation programs.

Waste minimization is a major challenge requiring this new level of attention among all stakeholders. The New Jersey model clearly indicates inclusion of all three major sectors of the waste stream makes the target more achievable than limiting programs to residential and ICI waste.

To assist Albertans in meeting its commitment to the CCME target, the Government of Alberta established the Action on Waste division within Alberta Environmental Protection in 1991 to encourage the reduction of waste, the recycling of waste materials, and the development of an effective recycling infrastructure. It addresses all aspects of the waste generation cycle, including the identification of waste and recyclable materials and the adoption of sound waste management practices. Its objective is to work in partnership with other levels of government, non-government organizations, and the private sector. Action on Waste provides information and assistance to municipalities, businesses and residents in their attempts to achieve the target.

"By targeting programs to residential waste only, almost 70% of the waste stream is missed. To see the effects of waste reduction, programs for the construction/demolition and commercial sectors must be implemented."

Municipal Planning Guide

When the true costs of waste disposal are examined... when the costs of meeting the 50-per cent target are calculated and publicly announced... then source reduction begins to make the most sense. ***If we don't create the waste now, we won't have to pay for its handling and disposal in the future.***

RECOMMENDATIONS

1.0 It is recommended that Alberta maintain its commitment to the Canadian Council of Ministers of the Environment goal of 50-per cent reduction of all municipal solid waste: residential, construction /demolition, and ICI waste;

1.1 that the Government of Alberta adopt specific targets for reduction from estimated 1988 levels as follows:
  - **25 per cent by December 31, 1996,**
  - **40 per cent by December 31, 1998, and**
  - **50 per cent by December 31, 2000;**

1.2 that the rationale for the target, the waste components being measured and how they are being measured be better communicated to municipal and corporate stakeholders, and taxpayers;

1.3 that a multi-stakeholder approach be used to develop a comprehensive public education strategy focused on effectively motivating Albertans to adopt waste minimization practices to better facilitate reaching the 50-per cent reduction goal; and

1.4 that the Government of Alberta, through the Action on Waste division of Alberta Environmental Protection, take the lead role in working cooperatively with regional, municipal and business stakeholders and the public to achieve the 50-per cent target.

"It's important to begin teaching kids about the importance of recycling at school... If we can get the message through to them there, they'll carry it with them when they grow up."

Canmore Leader

DIRECTIONS FOR IMPLEMENTATION

If governments can provide their rationale for the 50-per cent target to ensure the credibility of the target, goal-setting among waste management authorities and the public will be more acceptable. The Task Force review shows that programs focused on residential waste alone do not have the potential to deliver the overall 50-per cent reduction target. This situation is compounded by the observation that the quantity, quality, diversity and geographical location of wastes are factors which tend to impede the development of reduction and recycling programs.

"By 1995 it is expected that landfills serving over 70 per cent of the Canadian population will be full."

Environment Canada: 1991 State of the Environment Report

Upon clarification of the inclusion of residential, construction/demolition and ICI waste, it would appear logical to concentrate on the major components of waste going to landfill and to set realistic minimum levels of reduction for various components. We must evaluate the tools we are going to use considering all options. Focus must be on those components of the total waste stream that will give us "the biggest bang for the buck" and can sustain their value in the marketplace.

Waste disposal is a municipal responsibility. As a result, the province is unlikely to set a legislated goal. However, having specific provincial targets between now and the year 2000 will enable progress toward the goals to be measured, recorded and publicized. To be successful, citizens must be supported and joined in their efforts by all sectors of industry, government, institutions and commerce to find workable solutions. The implementation of legislated reduction programs in Ontario should be watched with interest. If Alberta's 1996 target is not achieved, serious consideration should be given to legislating reduction practices among stakeholders.

Because waste disposal and reduction practices have the potential to negatively impact public health, the environment and aesthetics, some caution must be exercised in the implementation of various programs. Those with the expertise to assess the degree of "harm" that may result should be involved in the decision-making process. Currently, approval of application permits for waste management facilities – sanitary and modified landfills, in particular – rests with local boards of health that are empowered under regulations of the *Public Health Act*, which has paramountcy over all legislation other than the *Alberta Bill of Rights*. The provincial government is examining the approval process.

"Our participation in numerous Edmonton festivals, Inner City programs, farmers' markets, drop-in workshops and conferences allowed approximately 170,000 people to reuse in many creative ways."

Anne Jourdan
Educational Program Director,
Imagination Market

Considering that waste minimization activities didn't really start in earnest until 1990, the Task Force found that a great deal has been accomplished in communities throughout the province. However, more effort has to be directed at educating the public with regard to the entire matter of waste reduction and the 50- per cent target. Education is an overriding component in virtually all aspects of dealing with the public and stakeholders on waste minimization initiatives. Many programs delivered through the school system are successfully getting the waste reduction message across to children, the next generation of consumers. Motivating adult consumers to change their waste-producing habits have not been as effective. A different approach is needed.

Action on Waste should coordinate the development of a comprehensive strategy for educating the public, and involve various stakeholders — governments, waste management authorities, businesses, academia, environmental groups, advertising and marketing firms, and the media. Discussion should focus on the psychology of motivating people to change, and on effective messaging to adults. The education strategy should be directed at overcoming communications barriers by creating awareness and understanding of the necessity for waste minimization.

Currently, FEESA — An Environmental Education Society — is involved in various initiatives on waste issues. It has developed three kits for kindergarten to grade 2, grades 3 to 6 and high school, respectively, for the Alberta Special Waste Management Corporation. As well, it holds 12-day training sessions for school teachers, community leaders, and business and industry representatives on waste minimization. It publishes and distributes *Update* quarterly to Alberta schools, special interest organizations, industry and government.

As well, Imagination Market of Edmonton, sponsored by the Talking Yellow Pages, visits several local schools and helps thousands of students rediscover the lost art of reuse. The Imagination Market – both staff and volunteers – collect, and prepare reclaimed industrial materials for redirection to the public and schools. Last year, the group assembled 250 teacher kits, containing a variety of reuseable and extraordinary discards, and an illustrated guide to creative re-use.

Private sector waste management companies also produce educational materials. Laidlaw, for example, has developed the Earth Academy program, a multimedia package, for K–12 students.

Following the implementation of various programs within regions and municipalities, it would be useful to set up a "report card" system that informs taxpayers of how well they were doing. This could be included on utility bills and issued as a news release to local media on a regular basis. Strathcona County, for example, promotes and applauds recycling initiatives with roadside signs.

Newsletters or fact sheets on "what's working for waste reduction" should be issued by Action on Waste and circulated to a broad audience, including the media. To this end, municipal and private waste management operators should provide more detail to Action on Waste to facilitate their ability to disseminate up-to-date information on waste reduction practices, and to give credit to communities and companies for their efforts.

Because the activities of Action on Waste are directly related to meeting the Government of Alberta commitment to the 50-per cent reduction target, it is important that the division's activities continue until the target has been achieved. Currently, Action on Waste operates the *Recycle Info Line*, a computerized data base containing 2,500 references on recycling depots, materials collected and many referral sources for interested Albertans. As well, *Waste Minimization Manuals* and *Fact Sheets* have been prepared for priority industry sectors and small businesses to assist them in identifying their own waste reduction potential. The *Municipal Planning Guide* provides guidelines to communities on developing effective waste reduction and recycling programs. The *Guide* is a useful document which identifies various options and their potential for success, describes areas to avoid, and includes worksheets.

ISSUE 1

FEESA
An Environmental Education Society

Talking Yellow Pages™
& Imagination Market™
Creating Environmental Alternatives

"As of August 31, Strathcona diverted 1,020 tonnes of grass clippings from landfill – and saved $40 per tonne in tipping fees."

Bruce Thompson
Environmental Operations
Strathcona County

A MATTER OF WASTE

ISSUE 2

COMPONENTS OF THE WASTE STREAM

There is a need for providing information that creates greater public awareness of the composition and sources of the waste stream... of the cost/benefit effectiveness of existing recycling programs... of the alternative uses for products that have the greatest potential in the marketplace... and of the overall need to reduce the amount of waste we generate rather than relying on re-use, recycling or recovery to solve our waste disposal problems.

> "Most of us have only vague ideas – and often misconceptions – about what that trash contains. But as landfill space shrinks and the cost of dumping trash rises, we need to know exactly what it is that we're throwing out so we can decide how best to manage it."
>
> National Geographic

Alberta's solid waste management authorities must cope with approximately 2.0 million tonnes of waste each year. Solid waste entry into a landfill is an outcome of a process of raw material extraction, production and consumption. Municipal waste includes durable goods, non-durable goods, containers and packaging, food and yard wastes and miscellaneous organic wastes from residential, commercial, institutional and industrial sources. Based on a 1991 Alberta population of 2.545 million people, an estimated 1.08 tonnes* of waste were generated per capita for a total of 2.748 million tonnes. The sources of solid waste are estimated at:

Industrial, Commercial and Institutional	1,099,160 tonnes
Residential	906,840 tonnes
Construction/Demolition	742,000 tonnes

It is difficult to accurately calculate the percentage composition of solid waste on a province-wide basis because many jurisdictions — 20 per cent — do not keep such records. Nonetheless, based on percentages compiled in 1991, the primary components of the municipal solid waste stream, excluding construction and demolition waste, have been estimated in the following chart.

COMPOSITION OF THE MUNICIPAL SOLID WASTE STREAM – 1991

Type	Percentage[1]	Tonnes[2] (000s)
paper products[3] & newsprint	32.0%	642.08
inerts/other	15.0%	300.97
food waste	12.0%	240.77
yard waste	10.0%	200.67
plastics	7.8%	156.50
glass	6.8%	136.44
ferrous metal	6.5%	130.42
wood	3.5%	70.22
rubber/leather	2.4%	48.15
textiles	2.1%	42.13
aluminum	1.4%	28.09
other metal	0.6%	12.03
TOTAL	**100%**	**2,006.50**

1 Source: Alberta Recycling Markets Study, Final Report 1992 - Sentar Consultants/Cashion Associates for Alberta Environmental Protection

2 Based on residential and ICI waste only (73% of 2.748 million tonnes)

3 Paper products include: printing and writing paper, container board, boxboard, special packaging, and tissue/special writing papers.

> "Poor countries throw away lots of vegetable matter – what some rubbish boffins evocatively call 'putrescibles'. The most striking change as countries become richer is in the quantity of discarded paper."
>
> The Economist

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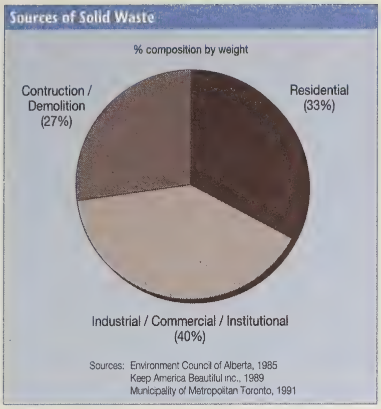
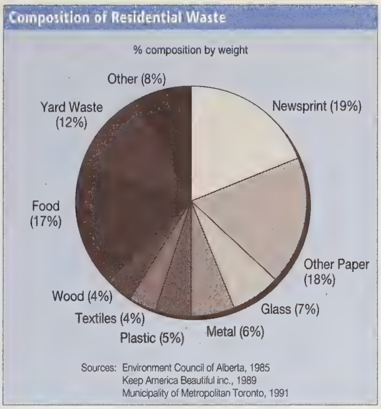
* Source: Alberta Environmental Protection; based on 80 per cent of Alberta'a population; 20 per cent of the population uses landfills that have no scales or use private contractors who do not report this information

Sources of Solid Waste



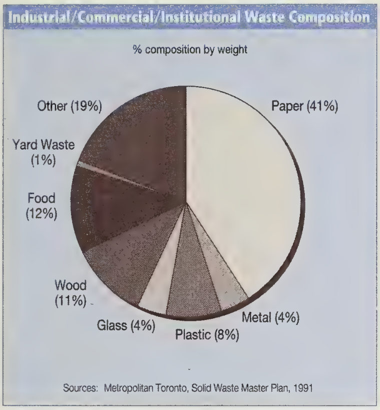
Sources: Environment Council of Alberta, 1985
Keep America Beautiful inc., 1989
Municipality of Metropolitan Toronto, 1991

Composition of Residential Waste



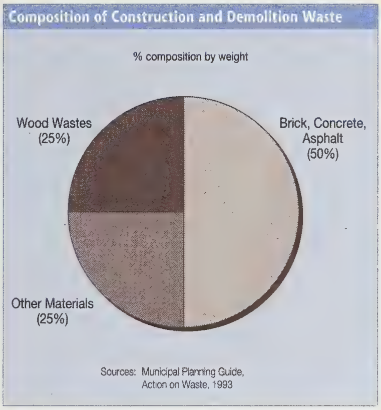
Sources: Environment Council of Alberta, 1985
Keep America Beautiful inc., 1989
Municipality of Metropolitan Toronto, 1991

Industrial/Commercial/Institutional Waste Composition



Sources: Metropolitan Toronto, Solid Waste Master Plan, 1991

Composition of Construction and Demolition Waste



Sources: Municipal Planning Guide,
Action on Waste, 1993

Note: The Task Force wishes to point out that the percentages indicated in these charts and graphs represent the best available or most appropriate information, and some discrepancies exist. The numbers are offered as guidelines to give readers a clearer picture of the general composition of Alberta waste. Adjustments would have to be made for specific communities, taking into account the residential/commercial balance and other factors. Wastes from the construction and demolition of buildings, roads and bridges vary depending on the amount of activity in an area. Rural communities generate less newsprint because fewer residents subscribe to major daily newspapers.

A great deal of promotion and effort has gone into establishing programs which collect and recycle certain wastes — glass, metals, plastics and paper. Together, they represent less than half of the total waste stream with paper accounting for more than 75 per cent of this waste tonnage. The Task Force found there is a perception among the public that the products they most readily return for deposit refunds, such as glass and plastic bottles and aluminum cans, form a large proportion of waste which otherwise would be directed to landfill. Yet, overall waste diversion in Alberta through recycling activities specific to these commodities resulted in marginal reductions relative to consumption, while other materials achieved high rates of recovery.

"We also had the opportunity to sift through real garbage at Kennendale Station. It's amazing what people throw away!"

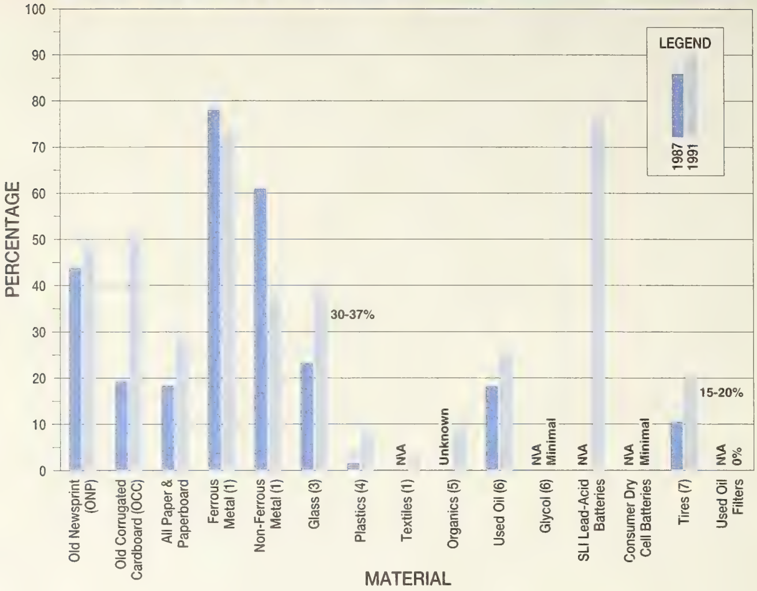
Judy Bennett, teacher
Graminia School

"Focus on the largest waste problems that can have the greatest impact."

Participant, Airdrie Workshop

> "Many people love to recycle. It seems to meet some deep need to atone for modern materialism, by saving some of the materials from the rubbish bin."
>
> The Economist

RECYCLING RATE COMPARISONS



1. Percent of total scrap generation.
2. Decrease is due to recognition of greater quantities of non-ferrous metals in MSW. In 1977 Beak Consulting Ltd. estimated a 28% capture rate.
3. Rates exclude reuse. Collected quantities are not always recycled.
4. Post-commercial and post-consumer only. Virtually all post consumer scrap is recycled.
5. Includes only non-garburated food waste, yard waste, non-recyclable paper, and other organics such as diapers.
6. Maximum recycling rate is about 55% due to losses such as in burning. volatization, etc.
7. Retreading of worn tires only.

Source: Alberta Recycling Markets Study, Final Report 1992 - Sentar Consultants/Cashion Associates for Alberta Environmental Protection

> "One tonne of waste wood, compacted to 80%, occupies 3.5 to 4.15 cubic metres of space."
>
> H.J. (Jim) Reed, Manager, The Pallet Man, Written submission to the Task Force

In the *Alberta Recycling Markets Study Final Report 1992*, the consultants calculated the amount of material purchased or received by the consumer and traced its path through to disposal or recycling. There is a distinction between material purchases and material usage or consumption. This accounts for the storage of materials, and the delay experienced for specific materials between the time of their purchase, and the time of their usage and subsequent conversion to scrap. For example, a book might not become available as scrap for many years...a glass jar could be re-used for homemade preserves many times over many years before it becomes available to recycling markets.

Various inerts and organics combine to form a substantial amount of all waste and should be redirected from landfills. Certain inerts — such as wood, concrete and asphalt — can be redirected to facilities which will return them to the marketplace. Clean wood, for example, could be banned from landfill almost entirely because it can readily be chipped or shredded for other uses. Construction and demolition wastes can be used for several purposes depending on the cleanliness of the feedstock. Organics from both residential and commercial sources form a significant portion of the waste stream and could be redirected for composting.

RECOMMENDATIONS

2.0 It is recommended that the Government of Alberta, through its existing regulatory framework, become a leader in the development of alternatives to landfill for various components of the waste stream, particularly those which have sustainable potential in the marketplace;

2.1 that regional sites include separate dry landfill sites for construction and demolition materials to facilitate re-use, recycling and recovery;

2.2 that trade and industry associations be further encouraged to implement waste disposal standards and practices among their members; and

2.3 that current activities related to commercial waste audits which result in cost recovery as one means of shifting emphasis from recycling to source reduction be continued, and that information be shared to encourage the expansion of auditing to other industry and municipal waste authorities.

DIRECTIONS FOR IMPLEMENTATION

Governments have traditionally emphasized a regulatory "command and control" approach to environment conservation. This is costly to government and not always effective in its application since regulatory processes and changes can be slow to respond to new needs.

The provincial government deficit and the pressure on the municipal tax base have drawn greater attention to the need for re-examining methods of environment conservation in general, and waste management in particular. Inroads have been made in facilitating municipal waste minimization planning on a regional basis. Action on Waste has provided support to the Peace, Bow Valley, West Yellowhead and Capital Regions, each of which has taken steps to address waste reduction and management in a cooperative and integrated manner.

The regulatory framework to implement and enforce major waste reduction practices exists within the *Alberta Environmental Protection and Enhancement Act*, Part 9 - Waste Minimization, Recycling and Waste Management. However, the current government preference is to enable industry sectors to regulate themselves, providing encouragement rather than impediment to the implementation of the 4Rs. By adopting specific targets for reduction as recommended, the government provides industry with the opportunity to respond with its own waste minimization plans.

Provincial emphasis is on the development of regional waste management authorities. Alberta Environmental Protection has been covering the capital costs of building new regional landfill sites, transfer stations and recycling centres, while participating communities pay operational costs. The approval process is complicated. It involves the Alberta departments of Environmental Protection, Health and Municipal Affairs at minimum, regulatory provisions within their respective Acts, and the proposed host municipality. However, there is no guarantee that public resistance — the NIMBY Syndrome — will not override such approval for development.

"A cardboard recycling program helps all five retail stores in Edmonton and Lethbridge recover corrugated cardboard. Through this program Overwaitea/Save-On-Foods has diverted approximately 456 metric tonnes per year from the landfill."

Dennis Kinsey
Manager, Environmental Concerns
The Overwaitea Food Group

"Pressure from environmentalists has gradually closed off easy options for getting rid of waste, raised its costs and altered the shape of the waste-disposal business."

The Economist

The Terms of Reference for planning and design studies require an integrated approach that incorporates the 4Rs and disposal, as well as an assessment of the environmental and economic sustainability of the proposed system. Pegging capital funding conditional on providing a waste minimization plan has several advantages. It helps the government realize its commitment to reduce waste by 50 per cent. Less waste going to the landfill and more to recycling and recovery systems may be more acceptable to detractors. The implementation of full-cost accounting procedures and user-pay incentives affords the regional authority the opportunity to offset operating costs.

> **"Environmental initiatives, particularly waste management, will compete with health and social programs for scarce public funds."**
>
> "Green Taxes: Just another tax grab?", ESP Newsletter

To promote involvement and awareness, announcements should be made to inform the public about the waste stream composition in their communities, activities underway that are directed at effectively reducing waste, and the subsequent results of these endeavours. Information can be distributed through the print and broadcast media, included on utility bills, and transmitted electronically by voice-mail and other pre-recorded message centres, such as "talking community pages" and media information lines. As well, more information should be provided on recycling: what products are accepted, when, in what form and why. It could be informative and motivational to illustrate the eventual and varied end-uses for recyclables.

Businesses can adopt similar methods of promoting their specific efforts at waste minimization, including corporate procurement and disposal practices and sales of recycled/recyclable products.

> **"Recycling efforts in the 13 St. Albert Protestant Schools helped save $19,000 from the trash bill and eased the burden on the local dump... Working together, the district's 6,000 students and 525 staff took a big bite out of the trash pile."**
>
> Suzanne Rundrigan
> Communications Officer
> St. Albert Protestant School Board

There is a need for cooperation and exchange of ideas among provincial/municipal administrators, waste management companies, businesses, educators and residents within communities and among communities.

Education is important in the development of a sense of responsibility for our waste and to create a shift in attitudes toward waste reduction. Working through the school system is seen as a logical vehicle for messaging. Children today are sensitive to environmental stewardship, can adjust more easily, and are instrumental in influencing their parents' actions. In addition, schools already involved in recycling activities are well-positioned to launch waste reduction programs, and should be open to suggestions given current fiscal restraints. For example, the "Learners in Action" program has 4,000 schools registered in Canada. Of the 900 in Alberta, 272 have been designated as "green schools". Green schools are those that have accomplished more than 100 environmental initiatives, and are granted "green" status by the Society, Environment & Energy Development Studies (SEEDS) Foundation. These designation principles are being extended to include businesses.

In the Spring of 1994, Decima Research was contracted by Pitney Bowes to conduct a national survey of office workers' attitudes toward waste reduction issues in the workplace. The survey found that Canadian companies are making an effort to reduce the amount of waste going to landfill through minimization practices. The highlights of the findings include:

- 73 per cent have waste reduction programs in place;
- 83 per cent recycle paper;
- 60 per cent do two-sided photocopying;
- 84 per cent sometimes buy environmentally friendly office products; and
- 19 per cent have formal environmental purchasing policies.

It is interesting to note that 78 per cent of offices in western Canada practice waste reduction compared to 73 per cent nationally. This is a significant increase from 71 per cent in 1993, 65 per cent in 1992, and 58 per cent in 1991.

The Environment Council of Alberta's Greener Operations project "promotes lean and green workplace policies and practices that balance environmental and economic concerns". By working with the Chambers of Commerce, area core-group networks have been established in Edmonton and Calgary. Participants regularly exchange information, conduct tours and sponsor workshops.

To assist local businesses, the City of Edmonton invites participation in its Commercial Waste Reduction Program, a free consultation service aimed at improving waste handling strategies. The program holds workshops, issues a newsletter and recognizes businesses for their achievement.

"Every year, Alberta's offices and institutions generate close to 200,000 tonnes of solid waste. That's the equivalent of 85 million packages of regular bond paper."

Alberta Environmental Protection

There is a real need for increased waste minimization and diversion activities on the homefront, too. Providing information on the "how to" and benefits of home composting and grass recycling are good places for municipalities to begin, because of the volume of food and yard wastes being generated — more than 440,000 tonnes. Such source reduction is more cost effective and environmentally-responsible than collection and disposal at a landfill. Furthermore, composting operations will have to be part of any plan to reach the 50-per cent reduction target while providing a useful end product that every community needs. Some municipalities go to great expense purchasing soil to reclaim landfills when compost could serve that purpose well.

Other innovative uses can be found for yard wastes. Clean grass clippings are being provided by Strathcona County to a mixed farming operation for cattle feed, while other yard waste is spread on the fields and plowed under as a natural mulch. Private landscaping contractors in Calgary are considering a composting operation for their purposes.

On a slightly different note, a California recycling centre collects yard clippings for its 400 goats, and food wastes from supermarkets and grocery wholesalers for its pigs — 300 of which were sold last year for pork. Combined with its baling and paint recovery operations, the centre estimates it has kept close to 22,000 truckloads of trash from going to landfill during the past 10 years.

Particular attention should be given to launching reduction programs in the construction and demolition industry. Much of the waste is recoverable and usable, but systems are required for accessing materials at landfill sites or that would normally be removed to landfill. Diversion at the gate to adjacent dry landfill sites, with a mechanism to separate and store materials, should be included as a minimization strategy in regional waste management plans. However, encouraging source separation is less expensive for both the waste management authority — which saves the cost of a dry landfill — and the contractor — who saves the tipping fees. The City of Calgary has opened a dry landfill site, and the Beaver Waste Management Services Commission in Ryley is assessing the expansion of its operation to include separation and storage.

"Once a layer of deposits covers the available surface of a landfill – which may take years – dumping continues on top, creating a new layer.

"Since such burial admits no light or air and scant moisture, organic matter in the trash decomposes slowly... [only] 20 to 50 per cent of food and yard waste biodegrades in the first 15 years."

National Geographic

Crushed concrete provides a base or surfacing material, while crushed asphalt can be remelted or used as a base. Fish Creek Aggregates of Calgary operates a mobile concrete and asphalt crushing service which moves from municipality to municipality working through stockpiles in dry landfills. In its first year, the company expects to process 25,000 tonnes of material per month. The City of Edmonton operates its own crushing process, and Alberta Transportation and Utilities requires that all contractors recycle the used asphalt generated in road repair work. Materials are usually remelted or trucked away for re-use as a base material in parking lots.

Architectural Clearinghouse

In addition, more companies should be encouraged to become involved in activities which eliminate transfer of materials to landfill sites. For example, Alberta Pacific at Athabasca opened the construction site on weekends to allow local residents to select unused construction materials. The Architectural Clearinghouse, a non-profit Edmonton organization, collects and accepts used or discarded construction materials for resale to the public. The Clean Calgary Association, through its 'Waste It Not' shop, collects unused materials from contractors and makes new products, or re-uses it as is or in new ways. Laidlaw operates materials recovery facilities in Edmonton, Red Deer and Calgary. Some household paint, collected during Toxic Round-ups, can be sorted, re-mixed and sold or given away.

> **"The Edmonton Homebuilders Association has begun a program with the slogan 'measure twice, cut once.' The premise of this slogan is to lessen the waste produced by the construction industry and ultimately reduce the cost to the industry itself."**
>
> Participant, Edmonton Workshop

Specific overtures should be made to trade and industry associations to consider implementing some form of mandatory compliance regarding waste disposal and reduction practices. Among these are provincial and/or local construction, homebuilders, building owners, forestry, grocery and lumber retailers, road-builders, food processors, hotel and restaurant associations. Lethbridge has targeted its local Home Builders' Association with advice on reducing material costs through re-use of offcuts as bridging and filling driveways with crushed concrete as a way of saving landfill costs. As an incentive, landfill user fees are being increased.

Demolition of
John Ducey Park,
Edmonton

REGIONAL DIFFERENCES AND THE NEED FOR FULL-COST ACCOUNTING

ISSUE 3

Among the province's 378 municipalities, there are significant differences in geology, demography, product options, waste management infrastructure and practices, public awareness of disposal costs, and fiscal capacity. Approaches to policy options most suitable to each region are also affected by the urgency of landfill as an issue.

Municipalities currently have a variety of systems in place for dealing with the collection and disposal of waste and recyclables. Edmonton, for example, has a "blue box" curbside collection system for recyclables for single family dwellings. A series of 11 strategically located recycling depots serve residents of multi-family dwellings, and small businesses that have been screened through the City's Commercial Waste Reduction Program. Collection is done by a non-profit society on the north side of the city, and a private sector firm on the south side. The City is responsible for single-family waste collection and disposal, while the private sector is contracted for multi-family residences and all ICI. The system is currently under review and will likely change somewhat in the near future.

The City of Calgary operates quite differently. Most residential recycling activity is accommodated through city-operated depots, strategically located for the drop-off of newspapers and glossy publications, plastics, clear and coloured glass, and tins. In addition to three other private collection programs, Alberta Youth Works Society offers curbside recycling collection by subscription only, at a cost of $60 per year, with funds provided for training and financial assistance to school drop-outs. The City is responsible for single-family residential collection, while private waste management contractors handle multi-family dwellings and all ICI.

Smaller urban centres like Airdrie and St. Albert have recycling depots that operate in conjunction with quite different systems. "Airdrecycle" is a permanent depot complemented by a variable curbside fee which is being phased in over a three-year period. St. Albert treats waste collection and disposal as a separate utility charge to give residents a better understanding of the costs of waste management. Property taxes were lowered accordingly. Such variations may cause difficulty in reconciling data on waste, because they are designed specifically for local circumstances.

> **"The City of St. Albert reduced bags of garbage from 4 to 1 bag per household after it initiated a recycling program with more than half the households using the recycling depots."**
>
> Participant, Edmonton Workshop

The City of Lethbridge collects all residential waste and about 10 per cent of commercial waste, with the balance collected by a private contractor. The City assesses universal monthly charges of $7.75 for residential pick-up, and $2.50 for maintaining and operating the recycling depot system in cooperation with a private company which also collects recyclables from 16 surrounding communities. Currently, city homeowners subsidize the recycling program for businesses and outside communities. The City is considering charging a fee to businesses and establishing an association fee for other communities.

ISSUE 3

The number of landfills in Alberta total 338 — 43 are sanitary landfill sites while 295 are modified landfills. Faced with rising costs of disposal and increased public concern over environmental impacts, the province has actively promoted the establishment of regional waste management systems since 1976. Recognizing the advantages of regionalizing their activities, 156 urban and rural municipalities have combined their services into 28 regional systems. More than 200 open dumps and modified landfills — many of which were unsupervised — have been replaced by 24 regional sanitary landfills and 160 waste transfer stations where operations are strictly controlled. A further eight systems are under development to serve 38 municipalities and will eliminate numerous additional modified landfills.

There is the potential for 23 other areas comprised of 80 municipalities to join regional systems or develop their own. Most of these communities have conducted planning studies which are under consideration. Should they all decide to participate as planned, more than 70 per cent of municipalities — other than larger cities — will have regionalized their waste management activities.

Individual municipalities within regions are responsible for the collection of waste from local generators — households, businesses, institutions — and conveyance to the transfer station or directly to the regional landfill. The authority is responsible for moving materials from transfer stations to landfill sites which may also be used as concentration points for recyclables such as tires, or appliances and other metals.

> "In an attempt to coordinate their waste minimization efforts, the communities in the West Yellowhead Region have put together a Regional Waste Minimization Plan. This agreement, reached between the communities of Grande Cache, Jasper, Hinton, Edson, Entwistle, Evansburg and Municipal District #94, is a cost-sharing agreement and a road-plan to reach a 50% reduction in the amount of waste sent to landfill.
>
> "Edson and the east half of the Municipal District have applied for a regional site. They want to replace the modified landfills in each small community with a manned regional transfer site. In this way, costs will become more visible."
>
> Participant, Hinton Workshop

RECOMMENDATIONS

3.0 It is recommended that the Government of Alberta encourage the use of economic instruments that suit the diverse waste management needs of municipalities; and

3.1 that the provincial government continue to facilitate regional landfill systems in an effort to close dump sites and unsupervised modified landfill sites.

DIRECTIONS FOR IMPLEMENTATION

The Task Force acknowledges that not all systems will be applicable in all regions of the province, but it does support the implementation of select economic instruments to help recover costs of waste disposal and to encourage waste minimization. It is also recognized that sparcely populated areas may have limited ability to pay for waste management systems, and may question the need for waste reduction practices. From an environmental risk standpoint those areas are generally more fragile and more likely to suffer adverse effects from uncontrolled dumping. Government assistance may be necessary to expand sanitary landfill services to some communities.

FULL-COST ACCOUNTING

Most municipal governments do not recover the full cost of collecting and disposal of household waste through user fees, but subsidize waste management from tax revenues. There are numerous expenditures that must be considered in determining the full cost of waste management. These include direct operational costs such as:

- collection and disposal whether by landfill, re-use or recycling;
- administration, enforcement and monitoring costs of landfill sites and recycling programs;
- health and safety, and quality assurance/control mechanisms; and
- capital expenditures on site acquisition, development, closure and post-closure care and maintenance.

Other costs associated with landfill operations include depreciation of property values, and increased construction and maintenance of transportation routes. The intangible costs include health risks, increased monitoring requirements, opportunity cost of land and air, community liability, waste as a lost resource, and others.

Insufficient data are available to many waste managers on the real costs of various disposal services and programs. As well, there are variations in data collection methods and applications. These factors contribute to an inability to assess real landfill costs versus real recycling costs versus costs of other options. In many communities, particularly rural areas, landfill is still perceived as the cheapest option, often despite a lack of evidence to support that perception.

Public concern about levels of taxation have not yet been matched by a high level of awareness of the contribution of waste to those costs. Even where the cost of collection and disposal is recovered through an explicit charge, there is seldom a direct relation between the amount of waste generated by an individual consumer and the cost of disposal to that consumer. It is anticipated that if consumers were informed of the real costs of waste disposal in their communities and charged accordingly for their portion, there could be greater incentive to reduce the waste being generated. The Task Force found that the generators of ICI and construction/demolition waste, who pay directly for removal, are more cognizant of real cost than residential generators.

RECOMMENDATIONS

3.2 It is recommended that the public be made aware of the real cost of waste disposal systems and recycling programs, and be informed about cost savings resulting from viable methods of waste reduction;

3.3 that standards of full-cost accounting for waste management services and new options should be required of municipal waste authorities and other similar bodies;

3.4 that the commitment to on-going, full-cost accounting procedures be a condition of qualification for capital funding of regional waste management facilities; and

"People have to realize there is a true cost of waste. That's the only way you'll get them to really start reducing it."

Participant, Fort McMurray Workshop

"When landfill tipping fees are set it is essential that true cost accounting is used and all costs are included. This is particularly important when considering recycling programs, as low tipping fees will act as a disincentive to recycling."

Jim Clare, Projects Manager, Waste Management of North America Inc.

"Collecting a certain amount of basic data on your municipal waste situation is essential. This data could include financial information on what your municipality spends for waste management services; how much longer the landfill your municipality uses will last; and how much garbage the average resident in your municipality contributes to the waste stream."

Municipal Planning Guide

3.5 that a system be established to assist waste managers in identifying the full costs of various alternatives and processes, in order to determine the optimum municipal and industrial investment approach.

DIRECTIONS FOR IMPLEMENTATION

Cost/benefit analysis, once determined, should be provided to the public so they can make informed choices regarding personal involvement in recycling and reduction practices. Knowing what it costs to get rid of one bag of garbage can become a motivation to change behaviour.

Most private waste management companies belong to the Environmental Services Association of Alberta whose "Code Of Practice" recommends that members "reflect full-cost accounting in their tenders". By the very nature of their fee-for-service operations, these companies maintain full-cost accounting records and are constantly refining their data collection systems. It would be useful to coordinate activities and establish a common pool of information which could be shared between private and public waste managers within regions.

Partnerships between government and industry should be the basis for developing a process to facilitate full-cost accounting on waste that will provide municipal waste managers and the waste management industry with information to aid their decision-making. This would include the information and analysis for proper evaluation of the full costs of alternative waste management systems and processes to determine the optimum municipal and industrial investment approach. In keeping with trends toward greater municipal accountabilility, Alberta Environmental Protection should require that applicants for capital grants include on-going, full-cost accounting procedures as part of their waste management plans.

Because understanding the "real" cost of waste management options is fundamental to making informed choices, a project on full-cost accounting on waste has been proposed. Ideally, the scope of the project will extend beyond Alberta's borders to the other western provinces to accommodate a number of jurisdictional and regional issues that affect waste management costs and strategies, and to promote harmonization where feasible. Broad involvement of business and industry, interest groups, regulatory agencies and government at all levels is necessary. The following representation is recommended:

- Environmental Services Association of Alberta;
- Recycling Council of Alberta;
- Action on Waste, Alberta Environmental Protection;
- Canadian Environmental Industries Association;
- Federation of Canadian Municipalities;
- Environment Council of Alberta; and
- other organizations, as appropriate

At minimum, the project should be pursued as an Alberta pilot with the intention that the data collection and evaluation processes would be applicable to other waste management jurisdictions.

> "Education was cited as a way to gain support for waste reduction efforts. Education alleviated resistance to subsidies for curb-side disposal in Camrose. People need to know they are making a difference."
>
> Participant, Red Deer Workshop

> "There needs to be partnerships between all levels of government and industry. We need: coordination, cooperation, and consistency."
>
> Participant, Edmonton Workshop

> "The real cost of disposing of the garbage must be known. People must realize how much money is spent getting rid of garbage before they will sit up and take notice, and find solutions to deal with it."
>
> Participant, Grande Prairie Workshop

In addition to establishing the system for full-cost accounting and evaluation, the project team would recommend effective methods of providing real costs and alternatives to the public to assist them in making informed choices. Education of the general public is seen as the major factor in influencing behaviour patterns that are directed at waste reduction.

Communities that have combined awareness programs with the release of costs for waste removal report greater ease in convincing the public of the benefits of waste reduction options which supplement or replace their recycling efforts. For example, the announcement of tag-a-bag programs, curbside tipping fees, recycling charges or other user fees could simultaneously draw attention to alternatives. Suggestions could range from participating in lug-a-mug programs to purchasing certain products in bulk to applying pressure on manufacturers to reduce or eliminate unnecessary packaging. As well, information on growing grasses which require less cutting and are more suitable to the region could ultimately reduce yard waste, save water, and limit herbicide and other chemical applications. While there are numerous programs that have been successfully introduced in North America and Europe, it is recognized that there is no single, simple solution that can be applied on a province-wide basis.

"Informed Choices = Effective Action."

Municipal Planning Guide

CALCULATING LANDFILL COSTS:

Background and Worksheet

The Rising Cost of Disposal:

FUNDING THE PROGRAM

LANDFILL-COST WORKSHEET

COST SUMMARY

POST-CLOSURE COSTS

CHECKLIST 9

WORKSHEET 1

START-UP COSTS

ISSUE 4

USER-PAY INITIATIVES

Until the 1980s, waste disposal costs did not form a significant portion of municipal budgets and waste collection was considered a basic service. Growing environmental concerns, stricter infrastructure requirements, and siting difficulties have raised the profile and the expense. New regulations are directed at making waste management facilities more comprehensive, uniform and environmentally acceptable. Greater emphasis is being placed on waste minimization and cost recovery.

"Yard wastes amounted to 500 tonnes per year. Eliminating this would mean a $7,500 savings in tipping fees."

Okotoks Western Wheel

In Alberta's pluralistic society, there are differences in attitudes toward consumption, resource stewardship, government intervention, and the impact of our activities upon others. Policy options to reduce waste must be developed and implemented within this context. Public acceptability of new policies which focus on economic instruments to reduce or divert waste undoubtedly will be influenced by greater awareness of the costs such policies seek to avoid.

Basically, there are three factors that influence the effective application of economic instruments to encourage waste reduction:

- the level of affluence of the community... as affluence increases, so does the generation of waste;
- the identification of the quality and quantity of service with the real cost... user fees must be properly structured and people must be made aware of what and how much they are paying for; and
- the need to retain a degree of competition within the waste management system... between and among private and public sector waste management services will ensure an appropriate mix of services to suit municipal needs.

"A user-pay system – whereby the more garbage you produce, the more you pay – would serve to discourage waste generation and encourage recycling and composting. But the user-pay system should discriminate between garbage, compostables and recyclables."

EcoCity Society

...from lane

...to landfill

The profile of waste minimization programs and public discussion of waste management costs normally increase in communities that are facing landfill dilemmas. A 1991 survey conducted by the Alberta Urban Municipalities Association indicated 31 municipalities expected their current landfill sites would be full by 1995; 24 by the year 2000; 12 by 2005; and 15 by 2015. At the time, Calgary had approximately 30 years of capacity remaining in its Southeast landfill, while Edmonton faced an urgent situation within a year at its Cloverbar landfill and had failed in its efforts to find a new site. However, commitment by Edmontonians to practising the 4Rs has reduced the amount of waste destined for landfill by 20 per cent since 1990. Combined with expansion of two sites and based on current disposal volumes, a further 10 years' capacity has been realized.

Municipalities stand to benefit greatly by applying various environmental charges. Raising revenues through measures that improve local environmental quality makes more sense than raising taxes that may drive businesses and their employees away. User fees, more reflective of the real cost of waste, are seen as positive steps toward waste reduction and program self-financing. They attract attention to the need for changes in the amount of waste we generate, and should be accompanied with education programs aimed at waste minimization.

Administrative costs associated with the switch to user-pay programs can be accommodated through effective planning. In fact, the Task Force learned that most programs have become financially self-sufficient and even have offset the budgetary costs of other waste minimization programs.

> "People have become more hostile to the idea of living near a rubbish dump. Opening a new landfill has therefore become a political problem. Sophisticated voters have become increasingly adept at chasing away new applications for waste treatment plants."
>
> The Economist

RECOMMENDATIONS

4.0 It is recommended that municipalities implement user-pay systems as an incentive for participation in comprehensive waste minimization programs;

4.1 that education programs be delivered to assist service recipients in understanding the necessity for fees and the benefits of waste reduction behaviours;

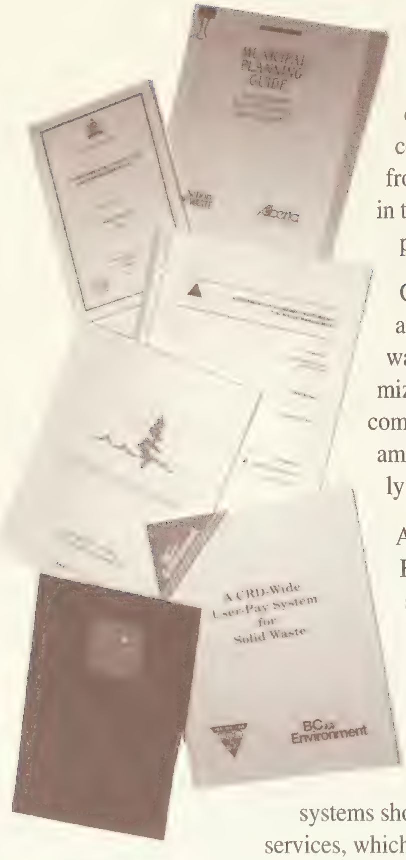
4.2 that the method of financing municipal waste management services should be revenue neutral; and

4.3 that municipalities publicize and strictly enforce penalties for illegal dumping as an economic deterrent to non-compliance with user-pay programs.

> "Until the Westlock recycle system is streamlined and less of a cost to taxpayers, tag-a-bag is on the back burner."
>
> Westlock News

DIRECTIONS FOR IMPLEMENTATION

Various user-pay systems that recover costs and/or reduce waste generation have been introduced in thousands of communities in North America in recent years. Review of studies, reports and media coverage, plus information shared at Task Force workshops, provided ample evidence that curbside fees, in particular, achieved decreases in waste going to landfill and increases in some or all 4R activities. For example, in Gananoque, Ontario, variable curbside fees resulted in 45 per cent less waste going to landfill, and between 48 and 70 per cent more going to recycling, depending on the material. The effects of landfill tipping fees, on the other hand, are less conclusive. However, among the success stories is Broome County, New York which increased fees from $12 to $35 from 1989 to 1991, and realized a 40-per cent drop in the amount of waste going to landfill while recycling and composting collection increased by 58 per cent.



Clearly, in order for economic instruments — such as curbside and landfill tipping fees — to serve effectively as incentives for waste reduction, they must be supported by comprehensive minimization policies and programs. Curbside collection of recyclables, composting facilities, recycling depots and dry landfill facilities are among the most popular waste diversion alternatives — particularly when implemented alongside public education programming.

As with other activities directed at waste reduction, the Task Force supports the need for public education programs to inform service recipients of the cost of waste management services, the need for user-pay systems, and the overall benefits that accrue from reduction and recycling practices.

It is important that municipalities recognize the possibility of being criticized for implementing user-fees unless they are offset by property tax reductions. Furthermore, funds from user-pay systems should be dedicated specifically to providing waste management services, which include waste minimization and disposal, rather than directed to general revenues and considered as a municipal revenue source for other uses.

The problem of illegal dumping is generally raised as an argument against the implementation of user-fee programs. However, most communities report that such activity was short-lived following implementation because response by authorities was quick, and costly to violators. Existing provincial statutes and municipal bylaws prohibit illegal dumping. Publication of fines and closer surveillance during initial start-up of user-pay programs, strict enforcement, and assessment of maximum penalties will discourage dumping by consumers trying to avoid user fees.

"Vulcan's bylaw enforcement officer has had a 100% success rate in identifying those who have dumped garbage illegally. There is a public report of those who dumped and offenders are served with a (published) public warning.

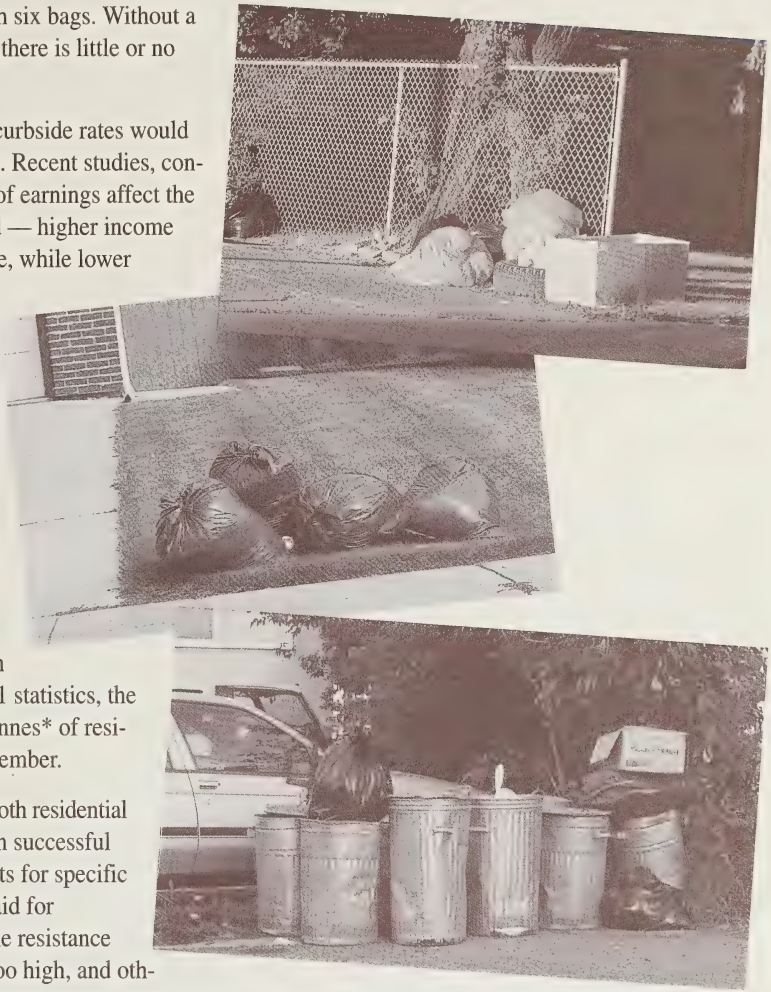
"Shaming people works through a combination of public regulation and public disgrace."

Participant, Coaldale Workshop

CURBSIDE FEES

Waste collection is generally viewed as a public utility provided by the municipality at a flat rate or as part of property taxes. Despite increased volumes of curbside waste and dramatically higher landfill disposal costs, there has not been widespread implementation of increased charges reflective of these factors. In most communities, the household with one bag of garbage per week pays the same as the neighbour with six bags. Without a cost component as a consequence of actions, there is little or no reason to reduce... no opportunity to save.

There is no statistical evidence that variable curbside rates would affect lower income earners more than others. Recent studies, conducted primarily in Britain, show that levels of earnings affect the amounts and types of waste that are collected — higher income families have more yard and newspaper waste, while lower income families have more packaging waste from processed and take-out foods. At a recent hearing by the Utilities and Public Works Committee of Edmonton City Council, the Social Planning Council of Edmonton indicated that they would prefer volume sensitive rates as a means of empowering lower income Edmontonians to make lifestyle choices.



The greatest impact likely occurs based on family size. In Alberta, the average family size is 3.1 people, with five or more people in only 14.9 per cent of families. Using the 1991 statistics, the average family would have generated 1.34 tonnes* of residential waste, or 432 kilograms per family member.

Overall, where they have been implemented, both residential and commercial user-pay programs have been successful in Alberta. Programs such as tag-a-bag, depots for specific items, and curbside recycling — generally paid for through property taxes — have met with some resistance by residents who feel that taxes are already too high, and others who were not motivated to reduce because the local landfill had many years of capacity left. Some communities that have placed waste collection and disposal costs on utilities bills have reduced property taxes accordingly — with a positive reaction from most taxpayers. Moreover, the majority of communities that implemented curbside fees experienced reduced garbage due to cost recovery from the taxpayer. In one area, prior to bag limits recycling was 16 per cent, compared to the current 25 per cent.

> **"I get ticked off that I pay the same amount for garbage pick-up as the guy down the street who sets 6 bags out at the curb."**
>
> Participant, Coaldale Workshop

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* Based on 33% of the total waste stream or 906,840 tonnes of residential waste, and 674,340 families in 1991. Source: Alberta Families Today, Premier's Council in Support of Alberta Families

RECOMMENDATIONS

4.4 It is recommended that municipal waste authorities apply incentives for waste reduction as close to the waste generator as possible, accompanied by public education programs outlining the advantages of user fees;

4.5 that rates for curbside collection of waste be volume-based, with unlimited amounts of designated recyclables collected at no charge;

4.6 that municipalities implementing curbside fees balance the charges with reduced property taxes, and indicate specific charges on utility bills; and

4.7 that municipal waste authorities consider a phase-in period to lessen the impact of volume-based curbside collection.

DIRECTIONS FOR IMPLEMENTATION

Virtually every jurisdiction — in North America and Europe — that has implemented curbside fee structures has experienced a noticeable decline in the amount of waste being collected. Placing limits on the amount which will be collected has resulted in a reduction of waste for landfill disposal and an increase in materials for recycling. For example, Seattle, which currently charges $15 per month for a 30-gallon can of non-recyclables, found that as solid waste rates increased, customers disposed of less waste as a result of recycling and/or more selectively purchasing goods.

Variable-rate user fees appear better because they empower a person to realize savings. Introduction of such rates should be accompanied by a visible reduction in property taxes to encourage acceptance of a user fee — and to avoid the perception of a "tax grab". Households that pay by the bag respond vigorously to price signals that reflect full incremental costs of disposal and curbside recycling programs. To avoid the perception of preferential treatment, mechanisms to charge equitable amounts for multi-family dwellings serviced by municipal collection need to be developed.

Since technology for curbside measurement of weight is generally unavailable in most communities, variable user-fee methods focus on volume. All use special markings to indicate that the generators have paid disposal fees. These include bag tags or stickers, can subscriptions, trash bags, and number- specific window stickers, with provisions for generators to purchase over-limit markers.

"The logic of environmental charges for state and local governments is especially powerful. Since the quality of life greatly influences where households and businesses locate, environmental charges that can raise revenues while improving environmental quality are more attractive than taxes that drive business and workers away."

Green Fees: How a Tax Shift Can Work for the Environment and the Economy.

"Appropriately designed variable rate user-pay systems for solid waste services have proven to provide effective incentives for waste generators to reduce the quantity of solid waste that must be disposed."

B.C. Environment

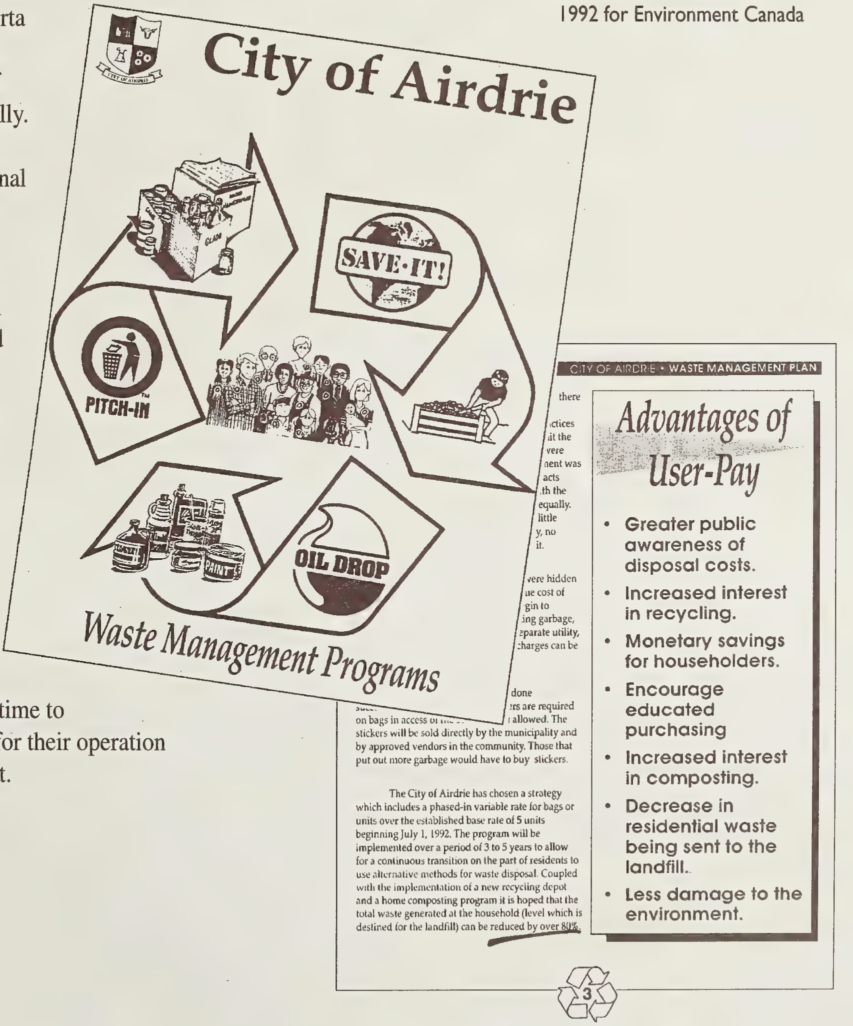
Prince Edward Island recently moved to a user-fee system in which waste is sorted into three categories: recyclables, compostables and residual waste for landfill. An interesting side-benefit occurred — as people sorted their waste into different piles, the amount of waste actually went down. The process gave people the opportunity to consider other uses for materials, often retaining it for re-use rather than disposal.

Since January 1994, residents of Victoria have been limited to one can of garbage per household per week and are charged $108 per year. Anything more is not collected unless affixed with an over-limit ticket available for $3.00. Last year, only about 12,000 tickets were sold among the 13,000 households served. The utility charge finances 75 per cent of the cost of residential waste collection. When the user fee was implemented in Victoria three years ago, the reduction in waste was dramatic — a 15 per cent decrease in tonnage. The City now estimates the total decrease in the 25-to 30-per cent range. A centralized compost is being developed at the regional landfill, mainly for commercial and industrial organic wastes.

> **"The Regional District of Nanaimo, British Columbia implemented a variable curb-side fee system in June 1991. The District now landfills less than half the per capita waste of neighbouring jurisdictions. The District's recycling rate (tonnes recycled/total waste) is more than double the rate of neighbouring jurisdictions."**
>
> Apogee Research Final Report 1992 for Environment Canada

When Airdrie started its variable curb-side rate in 1992 — the first in Alberta — its base cost was set at a five-bag limit per week, with the intention of reducing the limit by one bag annually. Over-limit stickers are available at $2.00 each. Combined with educational programs, comprehensive recycling facilities and a community-wide composting program, Airdrie will achieve its three-bag goal in the Fall of 1994. Residential taxes decreased while the new collection charges were introduced on utility bills and used solely for costs associated with the waste management system.

The phase-in period, also used in Victoria, has two distinct advantages. It allows residents the opportunity to adjust behaviours to meet the new limitations on household waste collection. And, it affords the municipality the time to put alternatives in place and to pay for their operation out of the waste management budget.



City of Airdrie

Waste Management Programs

SAVE·IT!
PITCH-IN
OIL DROP
PAINT
GLASS

CITY OF AIRDRIE • WASTE MANAGEMENT PLAN

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allowed. The stickers will be sold directly by the municipality and by approved vendors in the community. Those that put out more garbage would have to buy stickers.

The City of Airdrie has chosen a strategy which includes a phased-in variable rate for bags or units over the established base rate of 5 units beginning July 1, 1992. The program will be implemented over a period of 3 to 5 years to allow for a continuous transition on the part of residents to use alternative methods for waste disposal. Coupled with the implementation of a new recycling depot and a home composting program it is hoped that the total waste generated at the household (level which is destined for the landfill) can be reduced by over 80%.

Advantages of User-Pay

- Greater public awareness of disposal costs.
- Increased interest in recycling.
- Monetary savings for householders.
- Encourage educated purchasing
- Increased interest in composting.
- Decrease in residential waste being sent to the landfill.
- Less damage to the environment.

3

ISSUE 4

TIPPING FEES

The Task Force preference regarding landfill tipping fees basically is that fees should be introduced in municipalities where they do not exist, and increased or applied on a differential basis in municipalities where they do.

Landfill tipping fees vary greatly across Canada and within each province. The most comprehensive survey of fees was conducted in 1992 by the Federation of Canadian Municipalities. Noting that Ontario and British Columbia assess substantial levies while some provinces charge nothing, the FCM found that:

- 58 per cent of small municipalities of less than 30,000 people do not charge any tipping fee;
- average tipping fees per tonne in other small municipalities were in the $20-to $40-range;
- average tipping fees in medium municipalities of more than 30,000 people were between $40 and $60 per tonne; and
- average tipping fees per tonne in large municipalities of more than 90,000 people were in the $70-to $90-range.

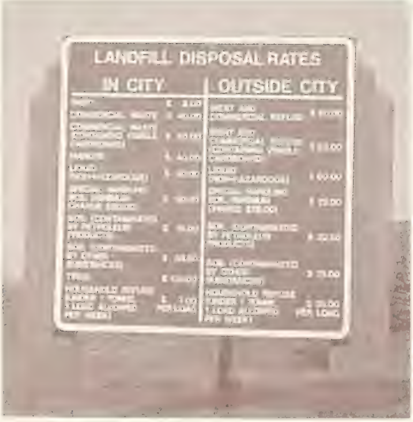
According to the survey, Alberta's average tipping fee in 1992 was $16.20 per tonne. Since then, several municipalities have increased rates to offset the establishment of regional waste authorities with more environmentally sound facilities. Lethbridge now charges $25 per tonne, Calgary $30 and Edmonton $40.

> **"Tipping fees at New York's only landfill, Fresh Kills [the world's largest landfill] rose from $80 to $150 a ton between October 1991 and July 1992; in northern New Jersey, tipping fees have shown a similar increase. Not surprisingly, it costs less for New York and New Jersey to send their rubbish halfway across America than to tip it at home."**
>
> The Economist

Applying tipping fees to residential, construction and demolition, and ICI waste is an effective way of offsetting the cost of landfill development and operation. However, they are generally invisible to the residents, unless they have occasion to take a load of refuse to the landfill and are charged accordingly.

Tipping fees have been introduced or increased in many Alberta communities to recover costs and to encourage waste minimization. Those municipalities that charge for disposal services on utility bills found tipping fees to be an effective educational tool for creating public awareness of the cost of waste disposal.

Some municipalities have begun to view tipping fees as part of general revenues rather than a cost recovery mechanism for waste management programs. This limits their objectiveness regarding programs that foster waste minimization practices.



Cloverbar Landfill variable rates

For the most part, higher tipping fees should be assessed for commercial users. Caution has been suggested in this area for a number of reasons. Concern centred on limiting our financial ability to dispose of garbage if rates are deemed to be prohibitive and alternatives are found outside the municipal waste management system. Furthermore, it was suggested to the Task Force that extremely high tipping fees could discourage business from locating in those areas — a very effective instrument for waste reduction but the least desirable.

It is important to view landfill space as a resource that should be sustained over time. Incorporating the principles of sustainable development ensures the options of future generations will not be impaired. Therefore, knowing that current landfill space is much cheaper than any future development, it would be prudent to begin financing the replacement. Future generations that will be affected by, and liable for, problems arising from current landfills, should not also bear the full responsibility for extraordinary siting, development and reclamation costs.

When a municipality is a "willing host" for a landfill development that will serve adjacent communities, sound management dictates that the tipping fee should cover the full costs of waste disposal over the longer term. While the municipality should be able to generate revenue from providing environmentally superior service to a larger area, funds should be set aside to protect local residents from future environmental and financial burdens.

The Task Force learned that some municipalities offer free or cheap waste disposal rates as a business inducement. Although this may encourage some companies to locate in the community, ultimately individual taxpayers bear the burden of increased disposal costs. Nor should rates be so low for certain wastes such as construction/demolition materials that they discourage re-use and recovery. Both such practices should be discouraged.

A variation of the "polluter-pay principle" is to charge a special fee for disposal of certain waste components which place unnecessary pressure on landfills. For example, major cardboard users who do not participate in industry-driven programs might be more receptive to recycling and re-using if there was an extra cost assessed. Reduced disposal of cardboard has the potential to free up 30 to 50 per cent of landfill space in some areas.

Compacted beer cartons

The assessment of differential tipping fees can become an instrument to achieve a number of objectives. They can be used to discourage disposal of certain materials in landfill. But more importantly, differential fees can be used as an incentive to direct materials to where they can be more easily recovered. It is an ideal mechanism to encourage source sorting of recyclables which ultimately serves the objective of waste reduction.

RECOMMENDATIONS

4.8 It is recommended that municipal waste authorities anticipate the cost of replacing landfill sites by including depletion and post-closure charges in tipping fees;

4.9 that tipping fees be set to recover costs and encourage overall reduction, without penalizing residents and businesses to the extent that it affects the economic well-being of the community;

4.10 that municipalities recognize tipping fees not as a general revenue source but as a cost recovery mechanism which facilitates programs on waste reduction;

4.11 that tipping fees be consistent throughout a region or catchment area to reinforce the concepts of cost recovery and waste reduction; and

4.12 that municipal waste authorities and private operators use differential tipping fees which reflect more accurately the real cost of handling specific wastes, particularly if technologies and programs exist for alternate disposal or recycling.

"Appropriate places for [refuse] are becoming scarcer year by year, and the question as to some other method of disposal ...must soon confront us."

U.S. Federal Office, 1889
quoted in Waste Age

ISSUE 4

DIRECTIONS FOR IMPLEMENTATION

Tipping fees can be an effective tool to help the public to understand that the cost of waste disposal services fluctuate with use, similar to the consumption of other utilities in most communities. In addition to existing cost recovery charges, municipalities should look at longer-term replacement of their facilities and begin attaching a minimum surcharge to tipping fees. Waste management authorities that have factored closure and post-closure charges into their existing tipping fee structure should set aside a portion of those fees to cover replacement costs.

"There is a definite change in behavior when user fees are introduced. When the tipping fees went up for commercial tax-payers some members reduced their waste by 75 per cent because there was a direct cost to them from their contractors."

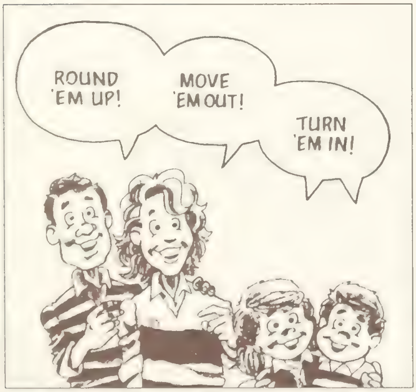
William Rowe,
Building Owners and Managers
Association of Edmonton

The Task Force cautions against unusually high and unjustified fees which create economic hardship to residents and businesses that, despite their best efforts, will still generate a certain amount of waste. As well, fees must be set based on the provision and availability of alternative recycling and recovery services within the catchment area, and the type of material to be disposed.

Upon implementation of full-cost accounting practices, mechanisms should be established to ensure closed-loop financing with revenue earned from waste management systems being dedicated to waste management programs.

The intent of applying consistent tipping fees within a region is to reduce the overall amount of waste going to landfill, not to divert it to another site. Over time, guidelines and standards for siting, development, operation, closure and post-closure of landfills should be applied on a provincial basis. When this occurs, and user fees more accurately reflect full cost, the problem of widely variable tipping fees should be alleviated.

Higher fees should be charged for recyclable and recoverable materials for which specific mechanisms exist for collection, deposit, storage, disposal or re-use. This system recognizes the different cost of handling material once it reaches the landfill. Victoria has set very stringent guidelines and restrictions on certain debris — disposal of mixed loads which include drywall or cardboard are subject to fines up to $1,000.


ROUND 'EM UP!
MOVE 'EM OUT!
TURN 'EM IN!

The differential rate can be used to direct material to various waste facilities within the same system. A dry landfill site would have a lower tipping fee for inerts such as asphalt, concrete, wood and other construction/demolition wastes that can be separated and stored for re-use.

Differential tipping fees should also be charged for toxic materials, such as paint and aerosol cans and batteries, that are a higher environmental liability in the landfill, and for which specific collection programs have been developed. Alberta Toxic Round-up, directed at households, has been operated by the Alberta Special Waste Management Corporation since 1988. Up to 130 communities participate annually as collection centres.

In 1993, for example, 36,486 aerosol cans were recovered from 60 communities. According to The Recycle Systems Company Inc. of Nisku which processes this particular Round-up waste stream, 36.5 cubic metres of landfill was saved, and resulted in the recovery of 3,649 kilograms of metal, 486 kilograms of plastic and 2,280 litres of fluid. The good news is that the process results in 96 to 98 per cent of the returned aerosol cans being recycled. The bad news is that Alberta household and industrial users send as many as 22 million aerosol cans, containing more than 67,000 barrels of potentially toxic fluid, to landfill annually — a volume that equals 40 football fields one metre deep!

Municipal compost heaps, properly sited and well maintained, should be available in close proximity to regional landfills to accommodate disposal of organics such as food and yard wastes. Some municipalities found that demand generally exceeds supply for good quality, free compost.

When implementing tipping fees on specific items such as large and small appliances, it is advantageous to have complementary recycling options in place to encourage re-use, discourage illegal dumping, and to support the tipping fee. Faced with substantially increased tipping fees at regional landfill sites, communities like Ponoka and Strathcona County have managed to cutback on the amount of waste going to host waste management facilities.

Having closed its landfill, Ponoka began hauling its waste to Stettler, 85 kilometres away, where it faced a tipping fee of $46 per tonne and overall costs of $330 per truckload. Residential collection rates have increased from $5 to $8.75 per month, and collection is limited to two cans per week. By publicizing costs and encouraging home composting, Ponoka effectively motivated the community to reduce the amount of waste it was generating — 98.5 per cent of the people have complied with the stipulations.

"PONOKA – The 75 people who signed up for the initial seminar (...on the fine art of recycling household organic products...) paid $25 each for the composter, which costs $50, and the accompanying seminar. Town council subsidized half the cost."

Red Deer Advocate

When tipping fees increased dramatically at Edmonton's Cloverbar landfill, Strathcona County launched aggressive recycling and reduction campaigns, including highly successful exchange and collection programs for unwanted articles. Residents and businesses have been invited to drop off and/or pick up "waste" items — large, small, working, broken — at a specific site on a particular day. Last year, between 3,000 and 4,000 tonnes of exchange materials were diverted from landfill – only 7.0 tonnes were left for disposal. The County also has done three collections of non-traditional waste, such as furniture and appliances, which netted 266 tonnes for sorting and distribution to recycling facilities or dry landfill. Other communities run similar programs which encourage residents to leave things at curbside for collection and use by neighbours.

ISSUE 5

REDUCTION THROUGH RECYCLING— THE ECONOMICS AND THE MARKETS

The efforts being directed at achieving the 50-per cent reduction target set by the Canadian Council of Ministers of the Environment presents an unprecedented opportunity to focus on development of recycling industries and markets. As awareness of the need to reduce the amount of solid waste going to landfills grows among consumers, so will their attention toward environmentally sensitive practices and purchases.

The real issue is probably "lack of incentives". Currently, few Alberta municipalities have provided financial incentives to encourage residents to discard less solid waste and to recycle more. There are no extra charges for collection of waste that should have been discarded at recycling depots or separated for curbside collection programs.

"The stench of garbage could be recycled into the sweet smell of money... We should treat garbage as a commodity... If everything is sorted right down to brass monkeys, it's worth a lot more money."

Participant, Red Deer Workshop

Certainly the consciousness level of Albertans has been raised in recent years with the advent of "blue box" programs; curbside collection of certain paper products and yard waste; backyard composting; recycling centres for voluntary drop-off of paper, glass, plastics, cardboard and other materials; and beverage container refund depots. Currently, hundreds of materials recovery facilities and more than 200 beverage container depots are available throughout Alberta's 378 municipalities. Across the province, the diversion rate achieved between 1988 and 1991 was 14 per cent. With greater attention being paid to waste reduction and recycling activities and the provision of more numerous alternatives, it is anticipated that the rate between 1991 and 1994 is relatively higher.

"We have been totally committed to quality control. All our commodities are sorted to the highest standard required by the industry. So we always have markets."

Cornelius Guenter,
Edmonton Recycling Society

Among Alberta's success stories is the Edmonton Recycling Society which was established in 1988 to operate the City's north side "blue box" program. It has provided life skills and employment to more than 500 people and created 70 full-time jobs. The Society has actively pursued local and global markets for its recyclable waste materials. In the past six years it has sold 45,000 tonnes of waste, and remitted $540,000 to the City of Edmonton as its 50-per cent share of operating surpluses.

For the most part, however, the question of economic viability of the recycling industry sector remains unanswered. Markets, historically, have been volatile, subject to fluctuating prices for various materials. It is anticipated that using economic instruments – higher/differential tipping fees and curbside fees – as a waste diversion mechanism will help stablilize supplies for a number of materials.

Current efforts to separate specific types of waste for recycling have often resulted in accumulations of wastes for which there are no markets. Stockpiling can be attributed to lack of market demand, inconsistent quality, restrictive or contradictory legislation, lack of technology, and instability or high cost of use compared to virgin material.

The distance between the collection point for recyclables and the market for the material, particularly in rural areas, also is the most common reason for failure of recycling projects — the cost of transportation may exceed the revenue from the sale. This problem was cited as a major barrier in a study on market options for waste wood chips.

It was generally determined that high costs of storing, transporting, sorting and consequently producing the recycled product can prevent economic returns from certain recycling operations. Despite the life-cycle benefits of purchasing many products manufactured with substantial recycled content, few are on a level playing field with goods produced from virgin materials. For example, the cost of paper products — whether from virgin or recycled fibre — generally has now been reconciled...the same scenario is unlikely in the near future for product substitutes such as "plastic wood" versus lumber.

Plastic wood planter

The Alberta Recycling Markets Study Final Report 1992, conducted for Alberta Environmental Protection, identified various barriers to markets for 12 recyclables:

BARRIERS TO MARKETS

■ Major Barrier
□ Minor Barrier

	Paper and Paperboard	Metals	Glass	Plastics	Textiles	Organics	Used Oil	Glycols	SLI Lead-Acid Batteries	Consumer Dry Cell Batteries	Rubber Tires	Used Oil Filters
Competitive pricing of primary materials	■	□		■		■	■	■	□		□	
Restrictive specifictions for finished products	□			□			■	□			□	
Limited existing commercial end uses			■	■	□	□	■	■		■	■	□
Lack of end users within reasonable hauling distance					□	□				■		
Limited quantities of material	□							□		■		□
Collection and sorting costs to prepare acceptable materials	□	□		■		□				■		
Historical volatility of material pricing	□	□		□	□		□		■			
Public acceptance of disposal technologies as appropriate for materials						■						

Source: Alberta Recycling Markets Study, Final Report 1992 - Sentar Consultants/Cashion Associates for Alberta Environmental Protection

"Viable recycling depends on a happy coincidence of materials costs, labour costs, and technology."

The Economist

It must be noted that since the research for the study was conducted, the marketplace has changed for various products, and these barriers may not reflect 1994 realities.

BOX BOARD
Flatten
Shoe, cereal, detergent boxes and similar products.
MILK CARTONS
Rinse with Hot Water and Flatten
LOW-GRADE PAPER ONLY
Loose-leaf paper, packing paper, art construction paper, brown bags, envelopes (remove windows).
Egg cartons or similar products.
NO Tetra paks or similar products.
CANS ONLY
Rinse Containers
PLASTIC CONTAINERS
CHECK FOR SYMBOL
# 2
MILK & WATER
NO COLORED CONTAINERS OR CAPS

ISSUE 5

> **"Almost 600,000 tonnes of newspapers and flyers were collected across the country in 1993... To supply the American market alone, Canadian companies have to import more than 800,000 tonnes of old newspapers and magazines annually."**
>
> Calgary Herald, March 31, 1994

Yellow Pages directories

Certain recycling has the opportunity to become a viable, value-added industry for Alberta, but more awareness of this possibility is needed. For example, the requirement for recycled paper at the Alberta Newsprint Company mill in Whitecourt is a case in point. Alberta supplies 95 per cent of the stock to meet ANC's 10-per cent recycled content specifications. The other 5.0 per cent is sourced from the U.S. only to keep supply channels open. The ANC demand — targeted at 80 tonnes per day this winter, almost half the old newsprint collected in Alberta — has created a climate in which the paper recycling facilities are receiving good prices. As a result, ANC must compete for product with out-of-province customers.

De-inking technology now processes glossy papers together with newsprint, eliminating a large part of the problem consumers have faced regarding the disposal of advertising flyers and magazines. Ventures like the Edmonton Recycling Society find this more profitable — glossy paper used to sell with "mixed" paper at $45 per tonne, but is now included with newspaper and sold for more than $100 per tonne.

Province-wide programs for collecting used telephone directories, organized by AGT Limited and Ed Tel, are specifically designed so the phone books can be printed on recycled directory paper stock. The recovery rate is close to 50 per cent, yielding approximately 1,870 tonnes of paper, and estimated at saving more than 30,000 cubic metres of landfill space.

According to the *Alberta Recycling Markets Study*, paper and paperboard comprise 32 per cent of Alberta's municipal solid waste stream — the largest single commodity in our landfills. As of 1991, 28 per cent or 157,000 tonnes were being recovered from new purchases for recycling — more than ever before. At the time, 68 per cent or 107,000 tonnes were exported primarily to British Columbia, the Pacific Northwest states and Korea. Most of the 50,000-tonne balance was purchased by three building product manufacturers for roofing materials and insulation. Since the study was conducted, the recycled paper industry has benefitted from greater separation at the pre- and post-consumer source, improved collection, better technology and increased market opportunities such as the Alberta Newsprint mill requirements. It can be expected that both the recovery rate and the percentage remaining in Alberta have risen substantially during the past three years. There are potential marketing opportunities for small scale recycling operations which produce shredded newsprint for animal bedding or packaging material, cellulose insulation, and moulded pulp packaging for egg cartons, fruit/vegetable trays and plant pots.

Among the other 10 recyclable materials identified in the study, the following are presented as examples of the differences and conditions that affected this emerging industry sector in 1991.

- Waste plastics comprise 7.8 per cent or 132,000 tonnes of the waste stream, of which approximately 15,000 tonnes were recovered. Post-industrial/commercial plastics are the greatest source of recycling activity, internally or off-site. Post-consumer plastics are not recycled in significant amounts for reasons of sorting, contamination and insecurity of supply. To the extent that they are collected, consumer plastics are recycled at curbside or through the operations of centralized collection depots — with beverage containers accounting for the greatest return — or retail grocery chains. Current legislation does not permit the use of recycled resins in containers for food stuffs, so most plastics are used for non-foodstuff packaging, shopping and garbage bags, building materials, carpets, fibrefill, and plastic wood products.

- Approximately 452,000 tonnes of scrap metal were generated in Alberta with 70 per cent — 300,000 tonnes of ferrous metals and 17,500 tonnes of non-ferrous metals — being recovered. Most is collected by scrap metal dealers, while 4,400 tonnes of aluminum were recovered through beverage container depots and Alberta Brewers' Agents. The majority of ferrous metals are processed at two mills in Edmonton and Calgary, with a portion transported to Saskatchewan. While processors continue to purchase metals, prices have dropped in recent years, reducing dealer profits.

- In total, 86,200 tonnes of beverage container glass were recovered, representing 72 to 76 per cent of the estimated new purchases of 111,300 to 117,900 tonnes. Most post-consumer beverage glass is collected through the universal depot system, and goes to one of two sorting and crushing facilities or directly to bottlers for re-use. Non-beverage glass containers and flat glass consumption totalled an estimated 56,400 to 62,100 tonnes. The recovery rate increased to approximately 48 to 55 per cent from 28 per cent in 1987. The 1991 market for recycled glass used by Alberta processors was approximately 9,100 to 13,600 tonnes; 5,900 tonnes were purchased by a British Columbia firm; and as much as 6,500 tonnes were sold through a U.S. broker. High quality, contaminant-free crushed glass is used to manufacture beverage containers, while secondary markets include the manufacturing of reflective paints and glass beads for highway markings and fibreglass insulation. Potential markets exist among processors of such products as glass filters, roofing tiles, and various building and road construction materials.

If Alberta is going to take advantage of the opportunities presented by an emerging recycling industry, manufacturers need assurance that feedstock materials will be available for production of their commodities. There is a strong connection between recycling and economic development initiatives if due diligence is directed at marketing development. Clearly, processors of recyclable wastes can create jobs and improve local economies.

Economic and market development go hand-in-hand — one generates jobs while the other targets demand for materials. There are a variety of ways that assistance can be provided to attract interest in the recycling industry — tax breaks, loans, grants, technical assistance and/or investment matching services.

"Until transactions in the marketplace reflect the costs of the natural resources consumed in their production, it will be very difficult for the marketplace to operate in a sustainable manner."

International Institute for Sustainable Development

"Recycling glass requires less energy than making it from sand. Recycling steel is cheaper than mining ore."

National Geographic

RECOMMENDATIONS

5.0 It is recommended that the provincial government look upon waste as a *renewable resource* and provide marketing development programs aimed at identifying and expanding markets for recycled products;

5.1 that both the provincial and municipal levels of government adopt appropriate incentives to assist in the development of a recycling industry;

5.2 that the provincial government replace the Resource Recovery Grant Program with a loan program which earns credit based on documented waste reduction results;

5.3 that the provincial government expand the use of the Recycling Fund to encompass recyclable materials other than tires;

5.4 that regional waste management authorities and other stakeholders explore options to cooperatively facilitate collection and/or reduce high transportation costs which might otherwise make recycling programs uneconomical;

5.5 that government agencies, such as the Alberta Research Council and others, and private sector research and development and manufacturing firms expand their efforts to develop and market new products from recyclable materials; and

5.6 that all segments of Alberta society be encouraged to establish purchasing practices that stimulate and stabilize markets for recyclable products.

> "If a material has value, it is pulled out of the waste stream. This is a natural economic instrument. This happens every day."
>
> Participant, Focus Group Session

DIRECTIONS FOR IMPLEMENTATION

Without providing direct financial incentives, governments and economic development authorities can offer invaluable assistance to potential recycling businesses within the existing infrastructure. Some firms require help clearing technical or bureaucratic hurdles...others have the technical expertise but need investors... most need marketing assistance.

Municipalities may require provincial or federal support in recruiting businesses to locate in their area... in identifying product development potential... and in locating marketing opportunities nationally and internationally.

Specific economic and marketing development programs can be established through the cooperative efforts of Alberta Economic Development and Tourism, Industry Development Branch and Investment Matching Services; Alberta Environmental Protection, Action on Waste; Alberta Research Council, Environmental Technologies Division; the newly-created Alberta Economic Development Authority; and local economic development agencies, boards of trade, or Chambers of Commerce.

Action on Waste should work cooperatively with Economic Development and Tourism on a market development strategy based on the *Alberta Recycling Markets Study* completed in 1992. The Industry Development branch assists firms in developing new recycling products and services, preparing business plans, and accessing the remaining provincial and federal financial programs.

In addition, Alberta's participation in the Pacific Northwest Economic Region helps the departments keep abreast of waste minimization initiatives and potential marketing opportunities in member states and provinces. PNWER now includes Alberta, British Columbia, Alaska, Idaho, Montana, Oregon and Washington. The organization hopes to create a region-wide market for recyclables by adopting uniform procurement programs among government departments, agencies and schools, and by purchasing recycled-content products.

While some Alberta municipalities and government departments provide various incentives to businesses, few are directed at recycling and waste reduction specifically. Information is needed on exactly what programs exist at the federal, provincial and municipal levels, and the requirements for access. In this time of tight budgets, the most appealing incentives are those which require no direct funding or loss of revenue. It is recognized that there is a certain level of difficulty in monitoring incentives.

Among the incentives which have been introduced or considered in other North American jurisdictions are:

- property tax exemptions for recycling enterprises, including manufacturers that use recycled equipment and/or materials;
- tax credits/elimination for the purchase of recycled equipment or products to avoid double taxing;
- low or no interest loans or loan guarantees for recycling projects;
- waiver of solid waste fees to businesses that can prove they are recycling 70 per cent of their waste;
- preferential purchasing and tendering processes that specify recycled materials;
- depreciation allowances for capital investment in recycling facilities and/or equipment;
- waiver or reduction of tipping fees for recycling businesses that handle designated materials; and
- diversion of 30 per cent of tire surtaxes to a loan program for tire recycling businesses.

Since its establishment, Action on Waste has administered two major funding programs. The Resource Recovery Grant Program provides waste reduction and recycling assistance, and has funded more than 200 municipalities and non-profit organizations. However, one problem identified is the difficulty in obtaining performance data related to the cost and effectiveness of the various waste minimization initiatives. Such data should be summarized and made readily available so that other organizations can learn from the successes and failures of the initiatives. The Task Force believes the program could be more effective if it was revamped as a loan program that rewarded the borrower's performance based on proven waste reduction activities. This would bring accountability into the process.

The Industry and Market Development program provided 50 per cent cost-sharing to encourage the development of new products, process technologies and enhanced markets. During its three-year term, 28 projects were approved which resulted in 70 direct positions, and are expected to create an additional 117 jobs through successful follow-through. Collectively, the projects will divert 131,000 tonnes and 506,000 litres of materials from the waste stream annually.

> **"Two barriers highlighted with respect to recycling efforts were the lack of steady markets for recyclables and the lack of a large enough volume to support markets. Urban areas tend to have a larger and more consistent supply than rural areas. In rural areas, the logistics of handling lower volumes of recyclables can be expensive."**
>
> Summary, Airdrie Workshop

Cardboard baler

ISSUE 5

In April 1994, the Recycling Council of Alberta and Action on Waste co-sponsored the province's first Enviro-Products Business Show in Red Deer. It showcased 79 companies from the recycling industry to more than 250 buyers from municipalities, schools, universities, hospitals and corporations. It has been recommended that the show be held annually, include products/services that address reduction and re-use, and expand to buyers and sellers from across Canada and the Pacific Northwest Region.

> **"To alleviate shortage and transportation costs, it was suggested neighbouring communities should create recycling consortia... to address the lack of recyclable materials and steady markets by creating economies of scale."**
>
> Golder Report

The Alberta Environmental Protection and Enhancement Act, Part 9 - Waste Minimization, Recycling and Waste Management, provides the enabling legislation for the surcharge on the purchase of new tires, a portion of which is designated for the Recycling Fund and administered by the Minister. The Act also provides for other industry-operated recycling funds which could be financially supported by surcharges on designated materials and by special gifts, donations or bequests. Action on Waste and various industry associations should consider the feasibility of establishing a fund to support the "promotion and development for marketing the products resulting from recycling the designated material", whatever that material is deemed to be.

The operation of the Tire Recycling Management Board is being viewed with interest by other jurisdictions. Apart from reducing the waste, it has the potential to create incentives for recycled products manufacturing. However, the Task Force heard criticisms regarding the Board's "solutions" to date — particularly the incineration at cement plants. It was generally felt that more constructive uses could be found for the tire resource.

Currently, Ontario recycles 12 million tires – almost a million kilograms — by shredding them into granules or crumbs to make manhole covers, paving stones, playground equipment, industrial equipment, construction barriers and other products. Injection molding technology exists to convert recycled rubber crumb of various density into virtually any industrial application, creating a market for granules that is predicted to multiply 10-fold within three years. Ford Motor Co. now uses recycled tire material for brake pads, air deflectors, shields and power train-related seals. The use of rubber crumb in asphalt paving material in Canada is still in the research stage. The Tire Recycling Management Board (TRMB) is closely monitoring the research development to assess the potential for this application in Alberta because of the nature of our climate. It should be pointed out that the TRMB has contracted for 25 per cent of the annual flow of scrap tires to be recycled.

A number of Alberta companies address two environmental concerns by turning old tires into composting units and garbage containers. Other products being made from used tires include swings, toys, planters and traction floor mats, plus feed troughs and "ani-mat" carpeting for livestock.

Harmonization of recycling systems will generate larger volumes of recycled materials which realize economies of scale and a more stable supply of material to processors or consumers. One option for smaller organizations and communities is to form regional marketing cooperatives that facilitate more efficient collection, larger volumes of material, and lower transportation costs per tonne.

Opportunities exist for such partnerships or cooperative efforts to create demand for recyclables by ensuring security of supply. For example, TransAlta Utilities is negotiating with municipalities for organic waste that can be composted and used to assist with mine reclamation. In Lethbridge, service stations provide drop-off depots for used oil that a local hospital uses as a co-generation fuel. Safeway back-hauls recyclables to Edmonton from Hinton and other small urban centres.

The Alberta Waste Materials Exchange, a cooperative effort between the Alberta Research Council and Alberta Enviromental Protection, links industries and municipalities to organizations that can use their waste materials. It acts a clearing-house for 12 categories of waste materials from acids to solvents to metal sludges and used industrial equipment. The products available to be traded, sold or given away are listed in a quarterly newsletter. Since its establishment in 1985, the Exchange has helped to protect the environment and saved millions of dollars.

> **"Internally, NOVA recycles plastic hard hats which must be replaced every two years to comply with health regulations. These are made into plastic park benches and fence-posts. They also recycle batteries and are investigating the possibility of recycling the rags used by mechanical staff to soak up oil. All staff members are issued ceramic mugs."**
>
> Participant, Airdrie Workshop

In several North American jurisdictions, procurement policies have proven to be a popular tool to increase demand for recycled materials and products. Specifically, governments and their agencies/institutions – including educational and health care facilities – and large private sector operations can play a key role. They can alleviate some of the barriers to markets by setting examples through active recycling and implementation of environmental purchasing policies.

An environmental procurement policy acts as an incentive to reduce waste and helps stabilize markets. Such policies should focus on reduction: purchasing less wasteful items, buying recycled products, and ensuring that producers assume responsibility for recycling of materials and waste they generate.

In 1993, the Government of Alberta expanded its 1991 Procurement Policy on Environmentally Responsible Products to include a set of 11 principles outlining its commitment to reducing waste, recycling materials, purchasing "green" products, and reducing energy consumption. Close to 500 recycled and other environmentally responsible products — from recycled paper products to re-refined oil to re-usable cups — are available from Public Works, Supply and Services to all government departments. The policy provides a significant boost to various recycling industries and distributors. For example, in 1992/93, the operation sold or used 279 million sheets of recycled general purpose office paper and effectively diverted 600 tonnes of waste from landfills. The provincial government, through this environmental procurement policy, purchased almost 40,000 litres of re-refined oil in 1992 for its 4,000 vehicles, providing sufficient market incentive for its contract supplier to increase production.

It is recognized that the cost premium of some environmentally friendly products acts as a disincentive to purchasing. However, imposition of a virgin materials tax in a resource-based economy such as Alberta's is not seen as a viable alternative. The creation of greater demand for products, and the implementation of incentive assistance programs would help lower the costs of manufacturing and processing. In the interim, consumers are encouraged to recognize the higher environmental value of these products and to absorb the higher cost.

Awareness programs, tied closely to the true cost of collection and disposal, should alert taxpayers to the financial burdens and environmental impacts of non-compliance with and lack of participation in waste reduction/recycling directives and activities.

ISSUE 6

PRODUCT STEWARDSHIP

"The best way to reduce the amount of rubbish that goes into the domestic bin is not to persuade people to sort unwanted recyclables. It is to persuade them to buy less and buy differently. That may be more difficult, but it is ultimately more likely to lead to a cleaner world."

The Economist

"...the Council [should] investigate and publicize true life cycle costs of recycling specific products in Alberta versus landfilling costs."

Participant, Red Deer Workshop

Increased awareness of actions which create stress on the environment have affected both personal and corporate attitudes toward purchasing practices. More and more thought is being directed toward the life cycle of both products and their packaging. Many people now mentally gauge environmental impact before they commit to purchasing products or services.

Preferential procurement practices among all segments of society are seen as having the potential to greatly reduce the amount of waste going to landfill... to foster waste minimization behaviour... to influence industry standards. In fact, the Canadian Standards Association has developed labelling guidelines to assist consumers and manufacturers in selecting products which will reduce waste.

Waste audits are a useful tool in determining the amount and use of materials/ products, identifying their ultimate disposal, and implementing the best options for waste reduction. Audits can be conducted based on guidelines for Life Cycle Assessments developed by the Canadian Standards Association. The Ontario government has legislated requirements for waste audits to be conducted by businesses, institutions and manufacturers. Action on Waste suggests that municipalities offer waste audit services directly to businesses, or to provide them with training sessions or prepared questionnaires to facilitate self-audits. Similarly, municipalities can provide residents with a Home Environmental Audit Questionnaire to evaluate their personal use of resources and production of waste.

Such audits are an effective way of changing buying habits to combine cost effectiveness with protection of the environment. The City of Edmonton produces a "grocery audit card" to assist shoppers in product selection. In addition, consumers should ask merchants and suppliers if they do waste audits.

There also is growing interest in equipment recycling. The Pitney Bowes study, mentioned previously, found that 84 per cent of businesses surveyed said they would be more inclined to buy office equipment from a supplier that offered a recycling program for its products after their useful lifecycle. Since 1993, Pitney Bowes itself, in partnership with Laidlaw Waste Systems Limited, has collected more than 10,000 photocopiers, mailing systems and scales from customers for disassembly. On average, 95 per cent of the components were either re-used or recycled.

Similar programs and practices of a larger or lesser scale have been implemented by the thousands across Canada. The concept of "cradle-to-grave" responsibility is beginning to reduce the amount of waste going to landfill as was intended by the Canadian Council of Ministers of the Environment when the 50-per cent goal was adopted.

In 1990, the CCME endorsed the National Packaging Protocol commitment to six policies directed at the reduction of packaging waste:

#1 All packaging shall have minimal effects on the environment.

#2 Priority will be given to the management of packaging through reduce, re-use and recycle.

#3 A continuing campaign of information and education will be undertaken to make all Canadians aware of the function and environmental impacts of packaging.

#4 These policies will apply to all packaging used in Canada, including imports.

#5 Regulations will be implemented as necessary to achieve compliance with these policies.

#6 All government policies and practices affecting packaging will be consistent with these national priorities.

"Any products which can't be recycled, should not be used for packaging."

Participant, Grande Prairie Workshop

Three milestone targets, with reductions measured from 1988 levels, were set:

- 20 per cent by 1992;
- 35 per cent by 1996; and
- 50 per cent by the year 2000.

Since the CCME endorsement, the National Task Force on Packaging, under the chairmanship of Environment Canada, has been leading work toward the Protocol's implementation, and monitoring progress.

A number of activities and projects have been undertaken, and various publications, conference presentations and meetings have helped spread the word on the reasons and ways to reduce packaging. Publications include the *Canadian Code of Preferred Packaging Practices, Guidelines for Packaging Audits and Packaging Reduction Workplans, a Municipal Guide for the Promotion of Packaging Waste Reduction,* and *Environmental Profiles of Packaging*. These are supplemented by a quarterly newsletter, media kit, public education pamphlet and fact sheets. Industry and public interest groups promote the diversion of their respective materials, and sponsor programs and workshops. The Grocery Products Manufacturers of Canada and the Canadian Council of Grocery Distributors led an industry coalition in developing a model for packaging stewardship, and are actively discussing with provincial governments the implementation of their model.

"To put it bluntly, since there will not be much development money over the next decade, there had better be a lot of good ideas."

Harvard Economics Professor Lawrence Summers on Consumer Product Packaging

Specific packaging waste reduction targets have been set based on best available data for 1988 which estimated the amount sent for disposal at 5.41 million tonnes. Encompassing 32 different packaging types and 32 industry sectors, half of the diversion should be achieved through source reduction and re-use, and the other half through recycling.

The monitoring system collects data from more than 10,000 establishments across Canada — response in 1992 was 87 per cent — including:

- the weight of packaging that is produced, used, re-used and recycled;
- the amount that is sent for disposal; and
- the weight of filled packaging exported less the amount imported.

Based on this extensive data, Statistics Canada calculated that 4.2 million tonnes was sent for disposal in 1992 — a reduction of 21 per cent from the 1988 level, slightly exceeding the milestone target. The largest contributor of packaging to the waste stream is paper — boxes, cartons, wraps and labels. Less than half of the 32 packaging groups account for close to 90 per cent of disposed materials. It is obvious that not all sectors responded to the Protocol's requirements. Attention will be paid to geographic areas and industry sectors where progress has been slow to occur. Reduction strategies and specific measures will target final consumer packaging and materials used for storage, transportation and display.

Among the initiatives related to packaging reduction is that of The Crop Protection Institute, which launched a program to manage empty pesticide containers. While there are countless examples of industry action regarding environmentally responsible packaging, the Task Force believes the Institute's program deserves special attention for a number of reasons. It includes a strong Alberta component and demonstrates how much can be accomplished when manufacturers, distributors, consumers and governments work together for a common goal. Its success is the result of careful planning and educational programming.

In 1989, the crop protection industry set a packaging waste reduction target of 50 per cent by 1995, with most of the progress being made through individual member companies. The introduction and use of refillable, multi-trip containers has led to significant reduction in the use of "one-way" containers, and to recycling empties made of high-density polyethylene and steel. A container fund has been established to support the collection, shredding, transportation and washing processes, and more than 600 collection sites have opened across Canada. Recycled plastics are being commercialized or tested as highway guardrails, road sign and fence posts, curbstops, and roofing and paving materials. The objectives for both one-way and multi-trip containers are the same: to make the handling easier and safer for farmers, and to better meet the requirements of downstream recycling.

Packaging is designed to protect products from damage, tampering, spoilage or deterioration during their journey from the manufacturer to the customer. It promotes the product.. provides content information... offers convenience and protection. Having served its usefulness, packaging generally gets discarded.

With the establishment of the National Packaging Protocol, industries assumed greater responsibility for product packaging from "cradle-to-grave". This concept of packaging stewardship expects that industries will assume the primary responsibility for the environmental impacts of packaging the products they introduce to the marketplace. Commitment to packaging stewardship includes recognition and promotion of source reduction, re-use and recycling.

"(Product stewardship) requires a combination of responsible consumer choices and responsible business decisions so items created for marketing do not end up in landfills."

Participant, Red Deer Workshop

"One of the main problems facing recycling is the separation of responsibility – private companies have traditionally made the decisions about the manufacturing and distribution of products, and governments have taken responsibility for dealing with the waste that is created. In trying to come to grips with this, the concept of stewardship has been discussed as a means of sharing responsibility."

Biocycle

However, manufacturers share the responsibility with distributors, retailers, consumers and governments for the current volume and mix of waste going into landfills. There is an expectation that governments will be consistent in setting policies that foster product and packaging stewardship and in monitoring its implementation. Other stakeholders are expected to support user-pay concepts, to make informed choices, and to handle re-usables and recyclables responsibly.

Industry believes that stewardship should be based on a level playing field between packaging and other recyclable or re-usable components of the waste stream...between imported and domestic packaging...and between packaging material types. As well, industry favours harmonization across Canada, recognizing that major regional differences exist.

Advance disposal fees are applied as economic instruments to a limited number of recyclables. Alberta's beverage container recovery system was initially set up in 1972 to address littering problems, but over time recycling became the over-riding thrust of the program. Offering consumers a deposit return as an incentive for recovering a product offsets some of the collection costs. The system has proven so successful that even the emphasis in legislation was shifted from litter management to recycling. Beverage producers are required to re-use or recycle the containers they recover. More than 200 depots accept approximately 7,000 different types of glass, aluminum and plastic containers — recovering close to half a billion bottles and cans, up to 80 per cent of the total purchased. Since January 1994, all Molson's and Labatt's bottles have been standardized, resulting in an increased return rate and decreased sorting and handling.

An advance disposal surcharge of $4.00 each is applied to the purchase of 2.5 million new tires per year in Alberta. The fee is collected by dealers and managed by the Tire Recycling Management Board which was established in 1992. The funds are separate and distinct from general revenues and administered directly by the Board and may be used to:

- establish and maintain a scrap tire recycling program for Alberta;
- provide for the effective, efficient and economical recycling of scrap tires in accordance with sound environment principles; and
- administer the Tire Recycling Fund.

The surcharge covers the costs of transportation and collection of used tires for processing by recyclers or as fuel for firing cement kilns. Currently, the primary users of the tires are Environmental Rubber Products, Inland Cement and Lafarge Canada, with minor involvement by smaller ventures. A number of issues were raised with the Task Force, many of which have been addressed by the Board or were non-issues which simply require clarification.

As mentioned in the marketing section of this report, the framework is in place to "designate materials" and establish other recycling funds under the same provisions that govern the Tire Recycling Fund. The timing is right for consideration of new industry-driven initiatives that would finance the collection and development of recycled products.

Used oil... re-refined oil

Receiving unwanted mail is becoming increasingly frustrating on various levels. Recipients have no control over what is put in their mail boxes yet Canada Post is legally obliged to deliver the mail, and independent distributors are paid to do household drops. With the implementation of user-pay programs, recipients pay to dispose of material they did not ask for or did not purchase. According to its 1993-1994 Annual Report, Canada Post Corporation delivers 10.9 billion pieces of mail annually, of which 5.7 billion are unaddressed or addressed — but unsolicited — advertising mail. In reality, Canada Post encourages mass distribution of unwanted mail through its bulk mail charges which account for 13 per cent of its revenue, but 52 per cent of its volume. Worse yet, unaddressed advertising mail accounts for just 5.0 per cent of revenue and 40 per cent of volume. Costs are increased by "return-to-sender" consumer protests.

Consideration should be given to requiring the producers and distributors of "junk" mail to pay return mail and disposal costs with an advance disposal fee.

The Task Force received numerous suggestions regarding expansion of the beverage container recovery service to accept other recyclables rather than establish alternate sites and systems. This matter is being explored by Alberta Environmental Protection. Currently, the Used Oil Program is an industry-driven pilot project which addresses the issue of control measures, end uses, collection systems and public awareness of used oil recovery. In 1993, six beverage container recovery depots were selected to collect used oil, oil containers and oil filters. During the first six months of operation, more than 32,000 litres of oil, 5,000 oil filters and 47,000 one-litre plastic containers were collected. This program focuses on the "do-it-yourself" market, and complements other industry-based programs.

In 1991, about 70 million litres of the estimated 127 million litres of oil consumed were available for recycling; however, less than 40 million litres were collected. Approximately 25 per cent was re-refined. With increased recovery and greater awareness of the need to dispose of used oil more responsibly, it is likely that more is now being re-refined.

The Alberta economy is subject to pressures from competitors in other provinces and countries. The cost of waste and measures taken to address waste and other environmental issues potentially affect trade balance and market share, as well as relative profit, sales growth and employment levels. The significance of the waste cost factor varies from industry to industry. Furthermore, levies on packaging create a difficulty because of the vast number of products imported to Alberta from other jurisdictions.

RECOMMENDATIONS

6.0 It is recommended that the Government of Alberta work with local industry coalitions to establish a viable model for product stewardship;

6.1 that provincial and municipal government procurement policies be consistent with the objectives of the National Packaging Protocol and made known to all departments, agencies and institutions;

6.2 that the private sector be encouraged to establish procurement policies that foster product stewardship;

6.3 that Action on Waste explore involvement in consumer education programs which inform the public of purchasing practices aimed at reducing packaging waste;

6.4 that the Tire Recycling Management Board increase its educational awareness activities among consumers, dealers, municipalities and potential business partners regarding its role, mandate and procedures;

6.5 that appropriate levels of government institute an advance disposal surcharge system for unsolicited mail and other wastes over which the recipient has little or no control, and that the Minister of Alberta Environmental Protection bring forward this issue to the CCME as a national concern and to gain inter-governmental support for this recommendation;

6.6 that the provincial government expand beverage container recovery depot services to other pilot projects to capitalize on the existing infrastructure in a cost-effective manner; and

6.7 that provincial regulations should ensure a "level playing field" for Alberta industry without the imposition of penalties that might impede the capacity to sell or export materials.

Government recycling

DIRECTIONS FOR IMPLEMENTATION

All consumers make choices when they purchase one type of product over another. Waste reduction requires a change in behaviour.

Significant changes have occurred in packaging technology and the way goods are transported suggesting that, in some cases, levels and types of packaging are a function of history. A number of detergent manufacturers, for example, have begun retailing concentrated laundry products in smaller, re-usable cardboard and plastic containers, while refills are packaged in plastic bags which create far less volume in waste. Most toothpaste goes on the shelf in the tube without a box. Bulk food sections in supermarkets offer everything from soup to nuts and parsley to pasta by the scoopful.

Other provinces, including Ontario, Quebec and Manitoba, have implemented industry-sponsored funding for recycling and recovery of packaging and other wastes. Stewardship programs can be designed by industry groups to meet regulatory requirements of various provincial governments.

"We're trying to get people to gravitate away from the throw-away society where you just flush it or stuff it and, rather, concentrate on how we purchase things so we connect the price with what the life-cycle cost is of that material."

Ron Driedger, Director,
B.C. Municipal Solid and Biomedical
Waste Management Branch

In August 1994, British Columbia proclaimed its *Waste Management Act - Post-consumer Paint Stewardship Regulation* which restricts the sale of paint until a stewardship program for collection, transportation and final treatment of paint is in place. It requires brand-owners to treat or contain, recover energy from, recycle or re-use all post-consumer paint within six months of collecting or receiving it at a return collection facility. Educational and consumer information must be supplied free of charge to sellers who must display that material and details about the return collection facility.

Alberta can improve the waste management infrastructure based on successful stewardship models implemented in other jurisdictions. The provincial government should approach the main players in the Canadian Industry Packaging Stewardship Initiative — Grocery Product Manufacturers' of Canada, Canadian Council of Grocery Distributors, Canadian Pharmaceutical Association and Canadian Soft Drink Association — about adopting their principles to the Alberta system. Similar considerations should be given to various product manufacturers and distributors.

Within Alberta, branches and agencies — such as the Agricultural Products Marketing Council and the Food Processing Development Centre — are well-positioned to foster product stewardship and influence packaging practices among Alberta-based producers and manufacturers.

> **"In 1989, the Crop Protection Institute, representing the manufacturers, formulators and distributors of crop protection products, initiated a container program to manage empty pesticide containers. Today, this program, now spanning coast to coast, is recognized as a leading proactive industry environmental initiative."**
>
> Crop Protection Institute

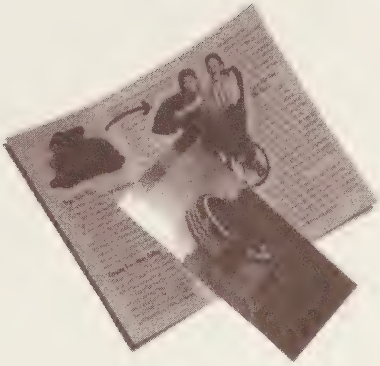
The initiatives now operating under the auspices of The Crop Protection Institute had their beginning in Alberta with the collection of empty pesticide containers in the mid-1980s. The current success of the program can be attributed to the education and awareness programs that were conducted among farmers and various farm-oriented organizations.

Big business — including all levels of government, large corporations and institutions, and retail chains — are in the strongest position to support product and packaging stewardship by implementing purchasing practices which include refusal of non-recyclable products and over-packaged goods. Alberta was the first government in western Canada to establish a comprehensive, environmentally-driven procurement program and has released its environmental principles for others to follow.

On another government level, the Federation of Canadian Municipalities has completed its *Municipal Action Plan on Packaging*. It is working with governments to develop procurement policies which support markets for recyclable materials and encourage waste reduction. Its scope includes an examination of the roles and responsibilities of the various stakeholders, a stewardship funding mechanism, means of addressing regional differences and implementations models. In conjunction with the CCME, the Federation has published a guide for the *Promotion of Packaging Waste Reduction*. The information centres on a "Less Is Best" campaign to create awareness, and includes a shopper's audit form, a packaging quiz, and a programming guide for children.

Collective actions by small businesses and the public can also have a significant impact on how goods are packaged and how companies dispose of packaging materials. The Environmentally Sound Packaging Coalition has launched a "Green Shopper" program in British Columbia, published fact sheets on ways consumers can help reduce packaging waste, and held workshops on environmental labelling. Alberta Action on Waste should become directly involved with the Consumers' Association of Canada (Alberta) and environmental non-government organizations in the provision of similar information initiatives in this province.

Alberta's Tire Management Recycling Board has suffered growing pains but is committed to fulfilling its mandate. Participants at rural Task Force workshops appeared to know little about the Board and its functions. There was a strong perception that the program had been established primarily for the benefit of Edmonton and Calgary. Rural communities reported difficulties meeting guidelines. Fort McMurray separated and stockpiled its tires for two years before they were finally accepted for recycling. Westlock stockpiled for years and recently buried the tires in a landfill. Calgary's Sheppard landfill contains more than 1.5 million tires waiting decisions by the TRMB on disposal plans for southern Alberta. Incineration at a cement plant in Exshaw has been approved.



It is expected that information sessions held in a number of communities in May/June 1994 will have clarified some of the misunderstandings. Nonetheless, a more concerted effort at public education is needed to explain purposes and procedures.

The matter of unsolicited mail and advertising materials should be raised by the Minister of Alberta Environmental Protection with other members of the Canadian Council of Ministers of the Environment. As part of their initiative to reduce waste by 50 per cent, the Council should make specific appeals to the Minister responsible for Canada Post Corporation for policy changes. If premium rates were charged, presumably the volume of unsolicited material would decrease, resulting in substantial waste reduction. If advance disposal fees were charged, the cost of disposal could be offset. The Federation of Canadian Municipalities has suggested a one cent levy per piece, with 90 per cent of this surcharge being returned to municipalities for disposal and recycling services. Publishers, retailers and other industry sectors should meet with governments to develop a stewardship model and explore alternatives.

"Legislate an end to junk mail that originates locally and continue to lobby Canada Post to end the delivery of junk mail to those who do not want it."

EcoCity Society

At the very least, Canada Post should implement an internal mechanism and widely publicize how consumers can stop the flow of junk mail. In addition, people can request that their names be removed from the Canadian Direct Mail Marketing Association's mailing lists — covering about 70 per cent of mailing lists in use.

The pilot project for oil recovery through beverage container depots is operating in six communities in central Alberta. The success of the project will be carefully monitored by Action on Waste and other interested industry groups. At present, large and small metal fruit juice cans have been added to the depots' mandate. Further expansion of services could make the depots more cost effective. Other recyclables to be considered include aerosol cans, paint cans, batteries, light bulbs and packaging plastics.

ISSUE 7

JURISDICTIONAL RESPONSIBILITY FOR WASTE MANAGEMENT SYSTEMS

In order to appreciate the context within which waste minimization and reduction initiatives must function in Alberta, the Task Force believed it was necessary to comment on jurisdictional responsibility for waste.

Provincial and municipal governments and the 17 new Regional Health Authorities encompassing the 27 existing health units, all have responsibilities in the area of waste management. Provincial statutes and regulations establish parameters within which 378 municipalities including three special areas, and various industries exercise their responsibilities in handling waste and waste issues.

> **"The South Peace Health Unit now looks after 35 landfill sites in its area and only one of those sites has a scale. Five are manned or supervised with little or no revenue collected at the site."**
>
> Participant, Grande Prairie Workshop

The responsibilities of Alberta Environmental Protection are described under Part 9 - Waste Minimization, Recycling and Waste Management of the *Alberta Environmental Protection and Enhancement Act*, proclaimed in September 1993. Municipal governments are required and empowered to administer collection of locally-generated waste, and to operate disposal facilities at approved sites under the existing *Municipal Government Act*. The new *Act*, which takes effect in January 1995, is unlikely to result in changes that significantly affect waste management responsibilities. The review of the *Municipal Regional Services Act* should be completed in the Spring of 1995 and may have some effect on regional waste management authorities. Health units are empowered to review and approve applications for waste management facilities under the *Public Health Act*. *The Public Health Act Waste Management Regulations* also are under review, and will result in eliminating or reducing the duplication/overlap created by the Alberta Health, Environmental Protection and municipal processes.

Further complicating the matter is the role of Alberta Environmental Protection in coordinating its activities with other initiatives: the Industry-based Scrap Tire Processing Program, National Packaging Protocol, Pesticide Container Collection Program, Beverage Container Recovery System, and hazardous waste managers in the province including the Alberta Special Waste Treatment Centre at Swan Hills.

> **"The group as a whole expressed that in order for any of these changes to occur, partnerships between government and industry must take place. There must also be cooperation between municipalities."**
>
> Recorder, Edmonton Workshop

The Government of Canada has developed a "Green Plan" which includes initiatives on solid waste reduction. It is actively involved with the Canadian Council of Ministers of the Environment in addressing the 50-per cent goal. Also aiming for the 50-per cent reduction is the National Packaging Protocol which, as mentioned in the previous section, calls for industry to adopt the philosophy of product stewardship by assuming primary responsibility for their packaging from "cradle to grave". While all sectors of society have some responsibility for meeting the goal, manufacturers, brand owners, and import distributors must do everything possible to ensure that both products and packaging follow the principles of the first three Rs — reduce, re-use, recycle.

The shift in recent years has been toward regional waste management authorities which are intended to provide integrated and comprehensive services within a catchment area. Combined with other efforts, this shift is expected to assist in the implementation of a more harmonized approach to meeting reduction targets.

Stewardship
Chapter
1994

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7.3 otection continue activities within the Canadian Council of Ministers of the Environment, particularly as they relate to harmonization of goals and services among and within all levels of government.

> **"There are too many political barriers caused by the multitude of governments."**
>
> Participant, Edmonton Workshop

DIRECTIONS FOR IMPLEMENTATION

Over the years, some overlap in responsibilities and authority has developed among the three provincial departments involved in the process of landfill siting and waste management programming. Some municipal spokespersons reiterated to the Task Force that they found the system complicated and confusing — one department might give approval to a waste management facility but another might reject the proposal on a basis seemingly unrelated to its mandate.

In recognition of this difficulty and in an attempt to avoid further confusion, a Waste Management Regulation Advisory Committee was established in 1993. In addition to government representation, key municipal-level stakeholder organizations are involved in developing recommendations for streamlining and harmonization. These considerations should be made in the context of the new Regional Health Authorities, and the revisions to the *Municipal Government Act*, the *Alberta Planning Act* and the *Municipal Regional Services Act.*

Maximum assistance and information should be provided to municipalities in their determination of the options that will contribute to the implementation of economic instruments for waste reduction.

While it was raised at a number of workshops, the Task Force recognizes that standardization of waste management systems, programs and fees throughout the province is neither possible nor desirable. However, certain standards should be set within regions or catchment areas to avoid difficulties that tend to arise due to inconsistencies.

> **"I.D. No. 18 (Fort McMurray) when planning to construct a new, modified sanitary landfill, was required to seek approval of the local Health Unit. The Health Unit in its evaluation used research from Alberta Environmental Protection, Alberta Agriculture, Food and Rural Development, Alberta Fish and Wildlife, Planning and Transportation."**
>
> Report on Waste Management in Alberta: Issues in the News

ISSUE 7

The Canadian Council of Ministers of the Environment see harmonization as a key to achieving their mission, which is "to make a measurable and significant contribution to the quality of the Canadian environment", over the next three to five years. The top priority of five goals, published in the December, 1993 issue of CCME Envirogram, relates to harmonization and reads:

> "rules and procedures among governments and between governments and stakeholders will be harmonized, duplication and overlap eliminated and roles and responsibilties rationalized".

The Task Force is highly supportive of the participation of Alberta Environmental Protection in realizing this objective, and urges the Minister to bring forward examples of Alberta's initiatives in regard to harmonization and waste minimization.

"Harmonization means three things to the CCME: clarifying federal and provincial roles; eliminating program overlap between governments; and bringing greater consistency to environmental legislation and regulations across the country."

CCME Envirogram

PUBLIC HEALTH CONSTRAINTS

The paramountcy of Section 83 of the *Alberta Public Health Act 1984* affects the planning and implementation of all waste management activities. Conflict can occur between waste reduction policies and public health interests. Some public health and safety risks associated with solid waste management are exposure to pathogens, toxic and harmful substances, and physical injury. These risks can affect householders, children, on-site users of waste management facilities, solid waste workers and the general public.

For example, in other provinces, landfill conservation through composting has been known to attract rats that feed on the decomposing waste. This comment should not be interpreted as a condemnation of composting, but rather as a flag indicating that composting must be carefully managed — even in a rat-free province. Insects pose a similar problem, and Alberta faces the risk of attracting bears and other wild animals to compost operations and uncontrolled landfill sites.

"...where bins are unmanned, if materials aren't sorted properly, the bin is contaminated and will go to landfill anyway. ...[recycling could be] for nothing if someone throws a cereal box in with the plastics."

Judy Bennett, teacher
Graminia School

Mixing wet garbage with recyclable materials in "blue boxes" created a public health risk in Surrey B.C. If recycled materials become contaminated because they are not properly separated at the source, handlers face exposure to disease.

As well, work-related injuries to sanitation workers increased when Seattle implemented variable curbside fees. A technique known as the "Seattle Stomp" was used to cram more waste into a single bag, resulting in hard-to-lift heavier bags. Solutions have varied from charging by weight instead of volume to redesigning garbage trucks with lower bins so workers don't have to lift bags or cans as high.

Another potential for conflict is bylaws that, in the interest of public health, prohibit on-site salvaging or scavenging but also discourage re-use and recycling.

RECOMMENDATIONS

7.4 It is recommended that public health remain the highest priority for waste management;

7.5 that the roles of the newly-established Regional Health Authorities and their environmental health officers/public health inspectors be clearly defined in relation to waste management authorities; and

7.6 that municipal waste managers, in association with health authorities, develop guidelines which mitigate public health risks of controlled, on-site salvaging and scavenging operations.

DIRECTIONS FOR IMPLEMENTATION

Public health concerns cannot be ignored in the enthusiasm to launch waste reduction and recycling programs. User-pay initiatives must be closely scrutinized to ensure that any attempts to avoid the cost do not create public health risks. Changes to current regulatory systems, while avoiding duplication and overlap, should reiterate the involvement of waste management authorities with Alberta Health as well as the departments of Environmental Protection and Municipal Affairs. This is important to ensure environmentally safe landfill facilities, and community composting operations.

Concerns have been expressed by consumer advocacy groups about how public health matters will be addressed with private sector control over packaging stewardship and the environmental soundness of industry practices. Assurances must be given by both health officials and industry representatives that these initiatives will not put the public at risk. An industry-to-government reporting mechanism is needed to monitor and ensure the on-going safety of packaging alternatives.

> "Salvaging may be one option for reducing the amount of waste destined for landfills. This would include methods, such as in Winnipeg, where salvagers get a permit from the city to remove what they can from buildings scheduled for demolition. A distinction should be made that salvaging should be allowed, but not scavenging, which includes people rummaging through garbage cans."
>
> Participant, Hinton Workshop

Members of the Environmental Services Association of Alberta include the majority of private sector companies that deliver and operate waste management services and facilities in the province. They have developed both Codes of Ethics and Practice which focus on:

- protecting the health and safety of employees and the public;
- protecting the environment through responsible management practices and high technical standards;
- performing their services in compliance with regulations and legislation; and
- minimizing risk of occupational and public exposure to environmental hazards.

The codes recommend that members develop health and safety policies, train workers accordingly, monitor and audit programs, and mitigate health risks.

Environmental health officers/public health inspectors who work out of existing health units should continue in their roles as watchdogs over potentially harmful waste disposal, including the need for quick action, particularly on illegal dumping. A comprehensive public awareness campaign, including reporting procedures, should accompany the implementation of user fees which can cause more-than-usual infractions.

Options for allowing access to dry landfill sites and transfer stations or the provision of drop-off areas adjacent to landfills should be considered to permit controlled salvage of re-useable items and recyclable materials.

In recent years, a number of proposals have been made to sort through or "mine" waste at landfill sites. There are many reasons for landfill mining: complete removal of the site with land restoration; reduction of the size of the landfill; gaining "air space" (capacity) in the landfill; upgrading a polluting site to current specifications to halt contamination; recovery of materials such as soil for future landfill cover or compost, metals, fuel product for waste-to-energy plants; ability to check security of landfill liners and gas collection systems

As the prices for recyclable materials increase, such activities will become more viable options. To prepare for this possibility, municipal and environmental health officials should investigate the risks associated with on-site, salvaging/scavenging and develop appropriate guidelines.

A public/private sector partnership project has been operating at Edmonton's Cloverbar Landfill since April 1992, but health and safety concerns are minimal. Environmental Technologies Inc. extracts 82 cubic metres per day of methane gas from rotting garbage, and pipes it 2 kilometres to Edmonton Power's generating station where it is mixed with natural gas for boiler fuel. The methane – 27 times more harmful than carbon dioxide – would otherwise escape into the atmosphere and contribute to the greenhouse effect. The gas is extracted through 100 wells that are inspected on-site occasionally by one employee of the firm.

"Landfill mining, or landfill reclamation, is becoming increasingly popular as a means of dealing with the management of waste. The technique involves extraction of recyclables such as ferrous and aluminum metals, compostable soils and combustible materials for incineration... Lancaster County, Pennsylvania was able to recover 78 per cent of the landfill space mined in 1991 and 1992; by 1995 700,000 cubic yards of landfilled material will have been removed."

The Bottler,
Waste Management Update

"More than a hundred of America's landfills have been tapped for methane. They produce 73 billion cubic feet of fuel a year – a minor but helpful fraction of the U.S. nation's total gas production."

National Geographic

THE COMMON SENSE APPROACH

The Task Force believes the implementation of economic instruments to achieve waste reduction is inevitable — particularly given the fiscal challenges faced by all levels of government and the trend toward greater accountability among all sectors of society. However, it is imperative that cost-effective, alternative waste minimization programs be provided to facilitate reduction practices by consumers. And, education must form an essential component of any waste management strategy.

The Task Force recommendations and the associated directions for implementation offer numerous suggestions that can be applied on a national, provincial, municipal, community or individual level. While the volume of waste going to landfill is the major concern, existing systems primarily measure weight. When we take action to reduce waste tonnage, we will automatically reduce waste volume. As a result, the overall objective of reduction will be achieved.

> **"Wastes are simply resources out of place."**
>
> Lester R. Brown
> World Watch Institute

Before applying a particular economic instrument, there are some important points that must be considered if waste managers are to find the options that best suit their local needs. To provide a framework for analysis, the following factors should be considered:

- **Cost effectiveness:** *Can the economic instrument achieve a measure of waste reduction for a reasonable cost?*
- **Alternative programs:** *Have sufficient alternatives been provided to facilitate waste diversion and minimization practices resulting from the implementation of economic instruments?*
- **Environmental effectiveness:** *To what extent does the economic instrument result in reducing waste? Is there a potential to increase or decrease the environmental degradation of air, land, and water?*
- **Jurisdictional compatibility:** *Is there correspondence between the responsibility needed to implement the instrument and the authority to implement and administer it?*
- **Complementary policies:** *Is there a need for complementary policies to ensure the effectiveness of the instrument?*
- **Impacts on competitiveness:** *What is the effect of the instrument on the ability of Alberta industry to compete within Canada and in international markets?*
- **Public acceptability:** *Is the use of the instrument supported by stakeholders and interest groups?*
- **Education programs:** *Are the educational or awareness programs and attendant costs incorporated into the implementation plan?*
- **Administrative efficiency:** *What are the costs involved in monitoring and enforcing the economic instrument?*
- **Flexibility:** *Can the instrument be modified easily to improve its effectiveness and efficiency, and to respond to changes within the community structure?*

- **Implementation time:** *Is the length of time required to implement the new policy or procedure consistent with local waste management objectives?*
- **Existing commitments:** *Is the measure consistent with current government commitments, such as not imposing new taxes?*

Provisions for assessing economic instruments are contained in the *Alberta Environmental Protection and Enhancement Act* – Part 9. However, successful implementation of waste minimization programs and the application of economic instruments requires more than consensus among elected officials and waste managers. The more direct the involvement by taxpayers in the design of programs, the greater the level of cooperation and acceptance.

More Albertans than ever before are participating in a variety of waste reduction programs... in large and small urban centres and rural and remote communities. Efforts are driven by various factors. From an administrative standpoint, there is a recognized need to contain and recover costs of programs designed to extend the life of landfills. Curbside collection services and centralized drop-off depots are expanding to encourage source-sorting of recyclables among larger numbers of people. Business and industry are being targeted as vigorously as residential waste generators. Markets are developing for recycled products as manufacturers create demand for feedstock and "buy recycled" promotions gain momentum. Home and community composting of food and yard wastes is bringing new life to our lawns, gardens and parks. User fees are creating incentives and adding impetus to the 4Rs.

"A little common sense could reduce the amount of garbage filling Stettler's landfill by 10 per cent concludes a... preliminary report on waste management alternatives for the area.

"It found that much of the 7,754 tonnes of garbage produced annually could be eliminated from the waste stream through grass roots recycling and compost projects."

Stettler Independant

But most importantly, the 4Rs — reduce, re-use, recycle and recover — afford the opportunity for society to become involved in a very personal way. Consumers can exchange wasteful behaviour for environmental responsibility. As National Geographic magazine so aptly put it: "Of all the environmental concerns that have come up through the years, this is the most personal. People are uncertain what they can do about saving the whales or the rain forest. But they can recycle their waste every day of their lives."

The Environment Council of Alberta Task Force on Economic Instruments for Waste Reduction advocates *the common sense approach* to waste management. It is the sincere hope of the members of the Task Force that the discussions and recommendations contained in *Our Forgotten Resource* will motivate Albertans to adopt waste minimization practices, and accept the use of economic instruments as a sensible and practical means to reduce waste.

Waste? Resource.

TASK FORCE MEMBERS

David Anderson, *Environment Council of Alberta*
David joined the Alberta Department of Environment in 1974, where he was responsible for social impact assessments, community affairs and review procedures for major projects. Seconded to the Government of the United Kingdom in 1980, David participated in the European Economic Community's working group on environmental policy. He has since worked with Alberta Federal and Intergovernmental Affairs with responsibility for constitutional/jurisdictional resource policy issues, and with the federal Department of Western Economic Diversification as Director of Policy and Planning. David is currently the Acting Chief Executive Officer of the Environment Council of Alberta.

Lynne Arling, *Consumers' Association of Canada (Alberta)*
Lynne has been an active consumer advocate for the past 25 years. She has held executive positions at the local, provincial and national levels of the Consumers' Association of Canada and has served as the Alberta president from 1989 to 1993. She continues to work with the Association as media spokesperson. Lynne has been employed with Consumer and Corporate Affairs Canada (now Industry Canada). She has also been an active volunteer on a number of committees in the areas of agriculture, education, environment, financial management, food, health care insurance and telecommunications.

Cheryl Croucher, *Environmental Consultant/Writer* (member since May 1994)
Cheryl is a writer, broadcaster and consultant specializing in environment/consumer issues. She contributes to various publications including Environment Network News and Environment Views. She is well known for her past commentaries on CBC Radio. Cheryl was a finalist in the media category for the 1994 Emerald Awards. She is a member of the Western Walleye Council and sits on the Alberta Pacific Forest Management Task Force. She is currently working on a video about the task force. Cheryl lives in Edmonton with her two daughters.

Bob Gillis, *Banff Recycling Society* (member until May 1994)
Bob is a member of the non-profit Banff Recycling Society. He has an academic background in Environment and Resources Studies, specializing in energy, water, and secondary resource conservation issues. Over the last four years, Bob has undertaken contract assignments for the Pembina Institute and a private recycling consultant. He has served as the Recycling and Solid Waste Coordinator for the Town of Banff. Bob was unable to complete his tenure with our task force as he has recently accepted a new position in British Columbia.

Robert (Bob) Grbavac, *Health Unit Association of Alberta*
Bob, a rancher in southern Alberta, has recognized expertise in agricultural economics and broad experience in local government. His experience includes 12 years on the County of Warner Council. He has also served as Chair of the Old Man River Regional Planning Commission, the County of Warner Agricultural Service Board and the Barons-Eureka-Warner Family and Community Services Board. In addition, Bob has been the Co-Chair of the the Agriculture Action Stabilization Committee, a Board member for the Barons-Eureka-Warner Health Unit and a South Zone Representative to the Health Unit Association of Alberta.

Cecil Griffith, *Rural and Improvement Districts Association of Alberta*
Cecil has been involved with Improvement District #18 since 1976. During his tenure, he has served on the Agricultural Service Board and the Muncipal Planning

Commission. In 1986, Cecil was elected to the Advisory Council of I.D. #18 and since 1989 has served as Chair. He has also been an Executive Member on the Rural and Improvement District Association of Alberta since 1986, serving as Vice-President for the past two years. Cecil lives in Goodridge, Alberta.

Patricia Mackenzie, *Alberta Urban Municipalities Association*
Pat is an alderman with the City of Edmonton. She has been active on council committees and boards including the Downtown Development Corporation, Community and Family Services, the Library Board and the Northlands Exhibition Board. She is involved with the Federation of Canadian Municipalities Board where she is currently chair of the environment committee. Pat is also the first Vice-president of the Alberta Urban Municipalities Association (AUMA) and has represented the AUMA on the Alberta Round Table on Environment and Economy.

Dennis Merrell, *Alberta Weekly Newspapers Association*
Dennis has served as Executive Director of the Alberta Weekly Newspapers Association since July, 1982. Prior to joining AWNA, he was an account executive with Baker Lovick Advertising Ltd. of Edmonton. He has been a Public Relations Director for an agency of the federal government and has worked with both community and daily newspapers. Dennis has been a national director of the Canadian Society of Association Executives and a president of the Edmonton Chapter of the CSAE.

Michael O'Connell, *Recycling Council of Alberta*
Michael began his career in the environmental consulting field. He later joined an international accounting and management consulting firm. He started his own management consulting practice in 1990, and provided advisory services to environmental and waste management companies. In 1993, Michael left his consulting practice to join the management team of Applied Technologies Corporation, a Calgary-based sales and marketing organization providing integrated environmental solutions to industry and government. He is currently Vice-president, Strategic Development. Michael has been involved with the Recycling Council of Alberta for several years, most recently in the capacity of President.

Tom Thackeray, *Alberta Chamber of Commerce*
Tom is the Vice-president of Policy, Planning and Development for the Alberta Special Waste Management Corporation. He is responsible for the Corporation's strategic planning as well as liaison with government departments. Before joining the Special Waste Corporation, Tom held a number of positions with Alberta Environment. These included Executive Assistant to the Minister, Legislative Planner, Director of Information Services, and Waste and Toxics Advisor to the department.

Bryan Walton, *Canadian Council of Grocery Distributors*
Bryan has worked as an Environmental Consultant with Renewable Resources Consulting Services, served as the Executive Assistant to the Minister of Agriculture, Alberta and held the position of Marketing Director, Alberta Agriculture. In 1987, he opened the western office of the Canadian Council of Grocery Distributors. In 1989, he assumed the additional responsibilities as the Western Regional Director of the Retail Council of Canada. He was promoted to Vice-president in both organizations in 1992. Bryan is also a past board member of the Alberta Food Processors Association (AFPA) and a former Director of the Alberta Restaurant and Food Services Association (ARFA).

Bruce Willerton, *Alberta Association of Municipal Districts and Counties*
Bruce has been farming since 1954. In 1979, he was elected as Councillor in Division 6 in the Muncipal District of Wainwright. He has since been involved with a number

of committees. For six years, he served as the Agricultural Services Board Chair. In 1987, he acted as the ASB provincial tour host. He has also served as the Zone Vice Chairman for one year and as the Chairman for two years. Last year, Bruce was elected to a director position, for a two year term, with the Alberta Association of Municipal Districts and Counties.

Gary Willson, *Environmental Services Association of Alberta*
Gary is a planning consultant with Laidlaw. Prior to renewing his consulting practice, he served as Laidlaw Inc.'s Director of Provincial Affairs, Western Canada. Before joining Laidlaw, he was head of U.M.A. Engineering's Urban and Regional Planning in Edmonton. He has been involved in the development of community relations initiatives including public involvement, preparation of environmental impact assessments, regional and municipal plans, site feasibility studies and recreational plans. Gary continues to be active in the Alberta Association, Canadian Institute of Planners having recently served five years on its Council. Gary is also actively involved with the Environmental Services Association of Alberta.

ENVIRONMENT COUNCIL OF ALBERTA PROJECT TEAM

Jim Rivait, Project Director
Sandra Nydokus, Assistant Project Manager
Mary Anne Wilkinson, Director, Outreach
Randalin Pretty, Coordinator, Public Processes
Jacqueline Innes, Communications Officer
Tammy Pidskalny, Research Assistant
Kelly Woodhouse, Desktop Publisher

WORKING GROUP

Kim Fowler, Alberta Municipal Affairs
Norm Jede, Alberta Economic Development and Tourism
Patrick Kane, Alberta Environmental Protection
Kevin McLeod, Alberta Health
Roy Neehall, City of Edmonton, Public Works
Grant Robertson, Alberta Treasury
Denny Ross-Smith, Alberta Economic Development and Tourism
Paul Ruffell, Laidlaw Waste Systems
Bruce Taylor, Alberta Environmental Protection
Gerald Thomas, Alberta Municipal Affairs
Bruce Thompson, Environment Canada

CONSULTANTS

Golder Associates Ltd., Carey Johannesson, Lynn McNeil & Philippe Reicher
D.G. Norton & Associates, Deryk Norton
KC Environmental Group, Kirstin Castro-Wunsch
Environmental Law Centre, Howard Samoil
Status Plus Public Relations Inc., Barbara Deters & Sylvia Holcomb
J. McQuaid-Cook

APPENDIX 2

SUMMARY OF MEETINGS

October 5, 1993 **Project Overview/Role of the Task Force**

2. November 5 and 9, 1993 **Issues Sessions**

   - Henry Van Egteren, Professor, Department of Economics,
     University of Alberta
     Overview of Economic Instruments

   - Cornelius Guenter, Executive Director Edmonton Recycling Society
     The Recycling Industry and Markets

   - Jim Clare, Project Manager, Waste Management Inc.
     Industry Issues and the Cost of Waste

   - Bryan Walton, Vice-president, Western Region,
     Canadian Council of Grocery Distributors
     Canadian Packaging Stewardship Initiative

   - Bruce Taylor, Director, Action on Waste Division,
     Environmental Protection
     The Need for an Overall Strategy

3. November 26, 1993 **Workshops Discussion/Discussion Paper Review**

4. January 4, 1994 **Discussion Paper Review/Workshop Scheduling, RFPs**

5. February 9-11, 1994 **Task Force Delegation Trip to Winnipeg**

The Manitoba Government adopted the Canadian Industry Packaging Stewardship Initiative (CIPSI) model in July, 1993. It is the only juridiction in Canada with direct experience in the area. A delegation of task force/working group members travelled to Winnipeg to meet with provincial government and city officials, environmental industry/waste groups and CIPSI representatives.

Alderman Patricia Mackenzie, Dennis Merrell, Lynne Arling, Gary Willson, Patrick Kane and Jim Rivait met with:

- Manitoba provincial government officials:
  - Jim Ferguson, WRAP Coordinator
  - Rod McCormick, Recycling Coordinator

- City of Winnipeg officials:
  - John Sinclair, Chair-Waste Minimization
  - Tony Kuluk, Solid Waste Planning Engineer

- Other environmental industry/waste groups:
  - Shirley Seidel, Executive Director, Manitoba Environmental Industries Association
  - Glen Koroluk, Recycling Council of Manitoba

- CIPSI representatives:
  Michel Primeau, CIPSI Coordinator
  Jim Fogg, Manitoba Soft Drink Recycling
- Canadian Council of Environment Ministers Secretariat
- International Institute of Sustainable Development

6. February 22, 1994 **Working Group meeting**, working group participation in the workshops

7. February 23, 1994 **Discussion Paper distribution/Workshops update/Winnipeg trip report**

8. April 18, 1994 **Joint Task Force/Working Group Meeting**
   Outcome of Workshops/Final Report discussion

9. June 1, 1994 **Joint Task Force, Working Group and Focus Group (made up of key industry representatives) meeting**
   The Effects of Economic Instruments on Industry

   Focus Group:

Paul Beaubien	Building Owners and Managers Association
Frank Dussell	Stanley Associates
Laudy Lickacz	Weldwood
Bill McBride	U of A Hospitals, Materiel Management
Gary Smith	Alberta Newsprint Company
Bill Stitt	CPL Paper Industries (Cardboard)
Dixon Thompson	University of Calgary
Hans Wolf	Lockerbie and Hole Alberta Construction Association
Chris Zeiss	University of Alberta

10. June 15, 1994 **Task Force development of Report Recommendations**

11. June 27, 1994 **Task Force finalization of Report Recommendations and review of Draft Report**

12. August 8, 1994 **Task Force review of Draft Report**

13. August 15, 1994 **Task Force conference call to approve Final Report**

14. August 29, 1994 **Task Force presentation to Standing Policy Committee on Natural Resources and Sustainable Development**

15. September 15, 1994 **Task Force release of Final Report**

APPENDIX 3

WORKSHOP RESULTS

A total of 231 individuals attended the workshops. Attendance at each workshop is outlined below:

DATE	LOCATION	ATTENDEES
March 3	Wainwright	28
March 7	Edmonton	46
March 8	Edmonton	21
March 10	Grande Prairie	25
March 11	Hinton	11
March 14	Red Deer	34
March 16	Coaldale	31
March 17	Airdrie	28
March 23	Fort McMurray	7

Attendees at the workshops represented a number of interests including local governments, waste management authorities, provincial government departments, non-governmental organizations, businesses, and non-affiliated individuals.

Participants' Affiliations at the Workshops

TYPE OF AFFILIATIONS	NUMBER OF PARTICIPANTS	PERCENTAGE %
Local Government	95	41
NGO	37	16
Business	31	13
Provincial Government	22	10
Non-Affiliated Individuals	17	7
Waste Management Authorities	13	6
Media	6	3
Education	4	2
Metis / Natives	3	1
Federal Government	3	1

According to workshop participants, the process was worthwhile from three perspectives: it allowed people to become familiar with the concept of economic instruments for waste reduction, it provided a forum to exchange ideas on waste reduction initiatives that are currently taking place in their region or communities, and finally, it allowed people with a common interest to network.

WORKSHOP PARTICIPANTS

APPENDIX 3

MARCH 3, 1994 – WAINWRIGHT

Roger Adams
H&R Waste Disposal
Wainwright

Ernie Bouchard
Secretary/Treasurer
Wainwright Regional
Incineration Authority

Cam Caswell
Senior Public Health Inspector
North Eastern Alberta
Health Unit

Jim Christensen
Reeve
Municipal District of Wainwright

Richard Glover
Gratton Coulee Auto Parts
Irma

Georgann Hancock
Executive Director
Vermilion Health Unit

Phil Hansen
Chairman, Waste Management
Provost

Phyllis Holmes
Publisher
Wainwright Star Chronicle
Wainwright

Boyd Jackson
Chairman
Waste Management Committee
County of Paintearth

Fred Kempton
Manager, Recycling Depot
Bea Fisher Centre
Lloydminster

Roger Lehr
Mayor
Town of Wainwright

John Leonty
County of Two Hills

Clara Lewis
Killam

Dean Litke
Town of Vermilion

Rod Mattice
Public Health Inspector
Vermilion

Iris McNalley
Assistant Administrator
Provost

Helen Middleton
President
Wainwright Chamber
of Commerce

Mike Pawliuk
County of Two Hills Regional
Waste Management Authority

Wayne Richardson
Reeve
County of Paintearth

Joe Rooks
City of Lloydminster

John Scott
County of Vermilion River

Ann Shapansky
Wainwright

Donna Snethum
Flagstaff Environmental Group
Lougheed

Jerry Spoor
Councillor
Town of Vermilion

Harold Straub
Town of Castor

Ed Thornhill
Director of Engineering
and Public Works
City of Lloydminster

Katherine Weibe
Councillor
Town of Bonnyville

Rene Williams
Provost Landfill Site Operator
Provost

MARCH 7, 1994 – EDMONTON

Mae Adamyk
Reeve
County of Lamont

Henry Andringa
Councillor
Beaumont

Peter Archer
Whitecourt Regional Solid
Waste Authority
Blueridge

Denis Bergheim
County of St. Paul

Arno Birkigt
Councillor
County of Athabasca

Kathy Borreson
Town of Bon Accord

Lorraine Cardinal
Fishing Lake

Preston Chalifoux
Kanata Environment Services
Edmonton

Richard Cherniwchan
Town of Smoky Lake

Steve Chodan
Councillor
Town of Westlock

Ross Daniels
Lands and Resources Director
Sputinow

Wayne Daniels
Fishing Lake Metis Settlement

Cam Edwards
Air and Waste Management
Association
Edmonton

Brian Gaudry
Kanata Environment Services
Edmonton

Cornelius Guenter
Edmonton Recycling Society

Mary Ann Hamaliuk
Councillor
Village of Andrew

Laurie Hodge
Economic Development
Coordinator
Town of Westlock

Hank Holowaychuk
Mayor
Town of Smoky Lake

Thomasine Irwin
Canadian Federation of
University Women, Edmonton

Duff Jamison, Publisher
St. Albert Gazette
St. Albert

Shirley Jolly
Sherwood Park

William (Bill) Kay
Alberta Research Council
Edmonton

Bea Kine
Councillor
Town of Westlock

MARCH 7, 1994 – EDMONTON (continued)

Lyle Kuzik
Reeve
County of Thorhild

Chris LaBossiere
District Safety Manager
Edmonton

Jean Lowry
Air and Waste Management Association
Edmonton

Wayne S. McCutcheon
University of Alberta
Edmonton

Susan Montonen
Edmonton

Lorne Olsvik
Town of Onoway

Randy Parenteau
Chairperson
Fishing Lake Metis Settlement

Jack Pearse
Councillor
Morinville

Ian Plischke
Environmental Health Services
Sherwood Park

Jim Reed
Manager, The Pallet Man
Edmonton

Mike Richards
CAO
Town of Bruderheim

Dennis Sarnecki
Councillor/School Trustee
Leduc

Cliff Sawatzky
Municipal Manager
Athabasca

Frank Schoenberger
M.D. of Sturgeon

Sharon Smith
Municipal Secretary
Town of Westlock

Kevin Stefanyk
Capital City Savings
Edmonton

Mike Stock
Environment Studies Institute
Grant MacEwan
Edmonton

Dave Swerdan
Councillor
County of Lamont

Louise Swift
Environmentalist
Edmonton

Hansa Thaleshvar
Mayor
Cold Lake

Colin Tulloch
Edmonton Chamber of Commerce

Dave Walker
Edmonton Power

Pam Williams
County of Strathcona

MARCH 8, 1994 – EDMONTON

Robert Borrows
Town of Morinville

Jason Brisbois
Environmental Industries
Western Economic Diversification
Edmonton

Grant Cameron
Waste Advisors
Edmonton

Ted Code
Town of Morinville

Cheryl Croucher
Freelance Writer
Edmonton

Reinhard Dunse
A.G.T. Environmental Protection
Edmonton

Simon Farbrother
City of Leduc

Harold Fraser
SV of Lakeview
Edmonton

Brian Gaudry
Kanata Environmental Services
Edmonton

Holly Goodman
VALID
Vegreville

Ron Hanson
City of Leduc

Gale Heintz
Mayor of the SV of Edmonton Beach
Stony Plain

Erwin Kilotat
Environment Canada
Edmonton

Bonnie Kulak
City of Edmonton

Leonard Lachance
Brazeau Recycling Society
Drayton Valley

Elizabeth Mustard
Environmental Law Centre
Edmonton

Roger Ouelette
Dove Centre
Town of Bonnyville

Tom Rogers
Alberta Environmental Rubber
Edmonton

Dwight Sarnecki
Kanata Environmental Services
Edmonton

Randall Soifer, P.Eng.
Principal, Ernst & Young
Edmonton

Hans Wolf
Edmonton Construction Association
Edmonton

APPENDIX 3

MARCH 10, 1994 – GRANDE PRAIRIE

Gary Barnes
Nelson Environmental Group
Grande Prairie

Art Bingham
Northwestern Health Unit
High Level

James Bonsor
City of Grande Prairie

John Boyle
City of Grande Prairie

Bill Brass
Manager
Improvement District No. 21
Worsley

Wayne Button
Peace River Health Unit
Peace River

Kristine Gafuik
City of Grande Prairie

Larry Hiller
Tallcree First Nation
Fort Vermilion

Adrienne Lacombe
Town of Valleyview

Jeff Linton
Recycle Plus
Grande Prairie

Gary Mayhew
Public Works Manager
Alberta Municipal Affairs,
ID No. 23
High Level

Dave McRae
Planner
South Peace Regional
Planning Commission

Jim Meagher
South Peace Health Unit
Grande Prairie

Betty Miller
West Peace Triple R Society
Beaverlodge

Don Munro
Town of Valleyview

William Neufeld
ID 23 Advisory Council
Lacrete

Leon Pendleton
Peace Environmental
Research Centre
Grande Prairie

Joan Plaxton
Publisher, Valleyview
Valley Views
Valleyview

Helen Rice
Chair, Northern Coordinated
Action for Recycling Enterprises
Grande Prairie

May Rowe, Chairman
Long Lake Regional Waste
Management Commission
Grimshaw

Harry Schudlo
County of Grande Prairie

Nick Shmyr
Friends of the Peace
Rycroft

Pearl Upshall
Alberta Public Health
Association
Grande Prairie

Brent Villeneuve
CJ Construction Ltd.
Paddle Prairie

Ivan Villeneuve
CJ Construction Ltd.
Paddle Prairie

MARCH 11, 1994 – HINTON

Anne Auriat
Councillor, Edson Recycling
Society, MD 94

Blair Bartley
CEO, Jasper National Park
Health Unit

Vern Betts
Smokey River Coal
Grande Cache

Mike Castonguay
Hinton Environmental
Association

Doug Drysdale
Alberta West Central Health Unit
Edson

Dave Edwards
Jasper National Park

Jim McNeill
Town of Edson

Orest Shymbunka
Public Works Supervisor
Town of Hinton

Jack Summers
Local Recycling Assoc. &
Alberta West Central Health Unit
Edson

Daryl Taitinger
Public Works
Grande Cache

Heather Warrenchuk
Parks Canada
Jasper National Park

MARCH 14, 1994 – RED DEER

Catherine Alder
Health Unit
Stettler

Kathy Allen
Hanna & District
Recycling Society
Oyen

Debbie Amoyt
Markerville

Connie Banack
Camrose Waste Reduction
Action Committee

Gilles Begin
Manager, Stettler Waste
Management Authority

Dylan Biggs
Citizen's for Responsible Waste
Management, Red Deer

Grant Cameron
Waste Advisors
Edmonton

Janet Coatham
Environmental Advisory Board
Red Deer

Janet Cole
Citizens Action Group on the
Environment, Red Deer

Bill Dodd
Field Services
Ponoka

Terry Green
Let's Recycle
Red Deer

Rick Guest
Village of Alix

MARCH 14, 1994 – RED DEER (continued)

Ken Halvarsen
Councillor
Black Diamond

Ken Horne
Waste Advisors
Edmonton

Farrel James
Councillor
Forestburg

Edward Kingston
Mayor of the Village of Mirror

Bill Kirtley
Councillor and Chairman
Stettler Waste Management
Authority

Christina Kleysen
Camrose Waste Reduction
Action Committee

Bob Mackenzie
NOVACOR Chemicals
Red Deer

Garth McCulloch
County of Lacombe No. 14

Peter Miller
Councillor
Forestburg

Dale P. Mather
Town of Innisfail

Tony P. Martens
Assistant Commissioner
County of Mountain View 17
Didsbury

Florence Nielson
Red Deer

W. Paynter
Chairman, Mountain View
Regional Solid Waste Authority
Didsbury

Lill Roth-Lee
Health Unit
Donalda

John Rush
Councillor
Town of Coronation

Dennis Sabasch
Red Deer

Christina Seidel
Sonne vera International
Blufftan

Gord Stewart
City of Red Deer

Ben Stober
Hanna

Debby Sutherland
Councillor
Town of Lacombe

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RESOURCE MATERIALS

Throughout our process, the Task Force has found a number of documents which were very useful. Several were prepared specifically for this project, while others were prepared for other jurisdictions, but provided useful examples and insight into the use of economic instruments to reduce waste.

- ***Economic Instruments for Waste Reduction Discussion Paper***
  Prepared for the task force by the Environment Council of Alberta project team, February, 1994.

- ***The Use of Economic Instruments in Waste Management: A European Review***
  Prepared by J. McQuaid-Cook, June, 1993.

- ***Summary of Economic Instruments for Waste Reduction Workshop Results***
  Prepared by Golder Associates, April, 1994.

- ***Waste Management in Alberta: Issues in the News***
  Prepared by Sandra Nydokus, September, 1993.

- ***A CRD-Wide User-Pay System for Solid Waste***, BC Environment, March 1993. This is a study commissioned and jointly funded by Capital Regional District (CRD) and Ministry of Environment, Lands and Parks. The aim of the study was to identify the best approach for implementing a user-pay system for solid waste in CRD. User-pay alternatives were examined by conducting several case studies of successful user-pay systems in other jurisdictions. The study was intended to be of use to other local governments that are considering implementing a user-pay system.

- ***Assessment of Economic Instruments for Waste Management***
  Prepared for Environment Canada, Final Report, December 29, 1992.
  Prepared by Apogee Research.

  This is a final report of a recently completed Study by Apogee Research Consultants entitled, Assessment of Economic Instruments for Waste Management. The authors have analyzed economic instruments in Canada and elsewhere and focussed on those instruments most applicable to reduction, reuse and recycling in the area of solid waste.The goal was to assess the best mix of government to reduce the amount of solid waste going for disposal.

- ***Alberta Recycling Markets Study***, Final Report.
  Sentar Consultants Ltd. Environmental Services in association with Cashion Associates. January, 1993.

  In the summer of 1992, SENTAR Consultants Ltd. was contracted by the Province of Alberta to examine the existing market situation for eleven recyclable materials. For each market analysis, we focused on the mechanisms by which materials are collected, consolidated, prepared for end users, transported to end users, and utilitzed be end users. They also compiled the quantities of recyclable material which was generated in 1991.

- ***Economic Instruments for Environmental Protection Discussion Paper***
  Canada's Green Plan, Minister of Supply and Services Canada, 1992.

- ***Charging Households for Waste Collection and Disposal, The Effects of Weight or Volume-Based Pricing on Solid Waste Management***, Final Report. Prepared for US Environmental Protection Agency.

- ***Waste Management Issues in Alberta***
  A position paper prepared by the Task Force on Waste Management (AUMA).

- ***Exploring Incentives: An Introduction to Incentives and Economic Instruments for Sustainable Development***
  Prepared for the Socio-Economic Impact Committee of the National Round Table on the Environment and the Economy. By J. Anthony Cassils.

  This paper provides an overview of the range of economic instruments available for implementing sustainable development in Canada. The paper is seen as a living document, intended to inspire further discussion on the merits and application of many types of economic instruments. Recognizing that no single incentive or regulatory system is going to provide a panacea for dealing with any given issue, an array of both economic and non-monetary instruments are explored.

- ***Municipal Guide for the Promotion of Packaging Waste Reduction***
  Prepared by the Canadian Council of Ministers of the Environment and the Federation of Canadian Municipalities.

- ***Municipal Planning Guide***
  Prepared by Action on Waste, Alberta Environmental Protection, December 1992
  The information in this guide was gathered from communities with existing waste reduction programs in Alberta, the rest of Canada and in the United States. While every community and every waste reduction program is different, there are some important lessons that can be learned by looking at the experiences of others. This guide identifies the keys to success and the pitfalls to be avoided.

MAGAZINES

- ***Biocycle***
  419 State Avenue
  Emmaus, Pennsylvania, USA 18049-997

- ***Waste Age***
  1730 Rhode Island Avenue NW
  Suite 1000
  Washington, D.C. USA 20036

- ***Ontario Recycling Update***
  Recycling Council of Ontario
  489 College Street, Suite 504
  Toronto, Ontario M6G 1A5

APPENDIX 5

RECOMMENDATIONS

The Environmental Law Centre was contracted by the Environment Council of Alberta to review the Task Force recommendations and identify jurisdiction responsible for implementation, legal implications and authority.

RECOMMENDATION	JURISDICTION RESPONSIBLE FOR IMPLEMENTATION	IMPLICATIONS AND AUTHORITY
Issue 1.0 **Achieving the 50-Per cent Goal** It is recommended that Alberta maintain its commitment to the Canadian Council of Ministers of the Environment goal of 50-per cent reduction of municipal solid waste: residential, construction/demolition, and ICI waste;	Provincial government, (Ministers of Alberta Environmental Protection and Alberta Health)	The implications of this commitment depend on the way that achievement of this goal is to be effected. The Minister of Alberta Environmental Protection may implement the recommendations identified pursuant to the authority provided in s.14 of Alberta Environmental Protection and Enhancement Act (AEPEA) (development of guidelines and objectives), the Lieutenant Governor in Council also has the authority under s.168 of AEPEA to make regulations with respect to components of the waste steam which may be considered as designated material, and packaging materials. The Minister of Alberta Health may give directions pursuant to the Regional Health Authorities Act for priorities which must be incorporated into their plans regarding the delivery of health services. As the goal and targets are not to be legislated there will be no mechanism available to ensure their attainment.
1.1 that the Government of Alberta adopt specific targets for reduction from estimated 1988 levels as follows: • 25 per cent by December 31, 1996 • 40 per cent by December 31, 1998 • 50 per cent by December 31, 2000;	Provincial Government (Minister of Alberta Environmental Protection and Alberta Health) Municipalities	AEPEA - s.14; Regional Health Authorities Act, s.7; Municipal Government Act, s.7.
1.2 that the rationale for the target, the waste components being measured and how they are being measured be better communicated to municipal and corporate stakeholders, and taxpayers;	Provincial Government Municipalities	AEPEA - s.14; Regional Health Authorities Act, s.7; Municipal Government Act, s.7.
1.3 that a multi-stakeholder approach be used to develop a comprehensive public education strategy focused on effectively motivating Albertans to adopt waste minimization practices to better facilitate reaching the 50 per cent reduction goal; and	Minister of Alberta Environmental Protection	s.14(4) of AEPEA provides the Minister of Alberta Environmental Protection with the necessary authority to participate in the CCME process
1.4 that the Government of Alberta, through the Action on Waste division of Alberta Environmental Protection, take the lead role in working cooperatively with regional, municipal and business stakeholders and the public to achieve the 50-per cent target.	Provincial Government (Ministers of Alberta Environmental Protection, Alberta Health and Municipal Affairs)	AEPEA, s.14; Regional Health Services Act, s.7; Municipal Government Act, s.7; Regional Municipal Services Act, s.2 and s.3.
Issue 2.0 **Components of the Waste Stream** It is recommended that the Government of Alberta, through its existing regulatory framework, become a leader in the development of alternatives to landfill for various components of the waste stream, particularly those which have sustainable potential in the marketplace;	Provincial government (Alberta Environmental Protection)	The enabling provisions are present in AEPEA (s.13 and s.168). The framework is currently applied to beverage containers and tires.

RECOMMENDATION	JURISDICTION RESPONSIBLE FOR IMPLEMENTATION	IMPLICATIONS AND AUTHORITY
2.1 that regional sites include separate dry landfill sites for construction and demolition materials to facilitate re-use, recycling and recovery;	Provincial Government (Ministers of Alberta Environmental Protection, Alberta Health and Municipal Affairs); Municipalities	AEPEA, s.14; Regional Health Services Act, s.7; Municipal Government Act, s.7; Regional Municipal Services Act, s.2 and s.3.
2.2 that trade and industry associations be further encouraged to implement waste disposal standards and practices among their members; and	Minister of Alberta Environmental Protection	AEPEA, s.14
2.3 that current activities related to commercial waste audits which result in cost recovery as one means of shifting emphasis from recycling to source reduction be continued, and that information be shared to encourage the expansion of auditing to other industry and municipal waste authorities.	Provincial Government	AEPEA, s.14.
Issue 3.0 **Regional Differences - Full Cost Accounting** It is recommended that the Government of Alberta encourage the use of economic instruments that suit the diverse waste management needs of municipalities; and	Provincial Government (Alberta Environmental Protection, Alberta Health and Municipal Affairs)	AEPEA, s.13 and 14; Regional Health Services Act, s.7; Regional Municipal Services Act s.2 and s.3; Municipal Government Act s.7 and s.8.
3.1 that the provincial government continue to facilitate regional landfill systems in an effort to close dump sites and unsupervised modified landfill sites.	Provincial Government (Alberta Environmental Protection, Alberta Health and Municipal Affairs)	AEPEA s.14, Part 9 and Waste Control Regulations; Regional Health Services Act, s.7; Regional Municipal Services Act, s.2 and s.3; Municipal Government Act s.7 and s.8.
3.2 It is recommended that the public be made aware of the real cost of waste disposal systems and recycling programs, and be informed about the cost savings resulting from viable methods of waste reduction;	Provincial Government (Alberta Environmental Protection, Alberta Health and Municipal Affairs)	AEPEA s.14, Part 9 and Waste Control Regulations; Regional Health Services Act, s.7; Regional Municipal Services Act, s.2 and s.3; Municipal Government Act s.7 and s.8.
3.3 that standards of full-cost accounting for waste management services and new options should be required of municipal waste authorities and other similar bodies;	Provincial Government (Alberta Environmental Protection, Alberta Health and Municipal Affairs)	AEPEA s.14, Part 9 and Waste Control Regulations; Regional Health Services Act, s.7; Regional Municipal Services Act, s.2 and s.3; Municipal Government Act s.7 and s.8.
3.4 that the commitment to ongoing, full-cost accounting procedures be a condition of qualification for capital funding of regional waste management facilities; and	Provincial Government (Alberta Environmental Protection, Alberta Health and Municipal Affairs)	AEPEA s.14, Part 9 and Waste Control Regulations; Regional Health Services Act, s.7; Regional Municipal Services Act, s.2 and s.3; Municipal Government Act s.7 and s.8.
3.5 that a system be established to assist waste managers in identifying the full costs of various alternatives and processes, in order to determine the optimum municipal and industrial investment approach.	Provincial Government (Alberta Environmental Protection, Alberta Health and Municipal Affairs)	AEPEA s.14, Part 9 and Waste Control Regulations; Regional Health Services Act, s.7; Regional Municipal Services Act, s.2 and s.3; Municipal Government Act s.7 and s.8.

APPENDIX 5

RECOMMENDATION	JURISDICTION RESPONSIBLE FOR IMPLEMENTATION	IMPLICATIONS AND AUTHORITY
4.0 **User-Pay Initiatives** It is recommended that the municipalities implement user-pay systems as an incentive for participation in comprehensive waste minimization programs;	Municipality	The Municipal Government Act (s.8) provides for the establishment of fees for services. Care must be taken to ensure that the fees are for the services provided and cannot be construed as fees for licenses, permits or approvals which may be considered as a tax. If the levy can be construed as a tax, then it must be a "reasonable" one, and the courts have held that the fee cannot be unfairly discriminatory, confiscatory or prohibitive.
4.1 that the education programs be delivered to assist service recipients in understanding the necessity for fees and the benefits of waste reduction behaviours;	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act s.2.
4.2 that the method of financing municipal waste management services should be revenue neutral; and	Municipality	Municipal Government Act, s.8; Regional Municipal Services Act, s.2.
4.3 that municipalities publicize and strictly enforce penalties for illegal dumping as an economic deterrent to non-compliance with user-pay programs.	Municipality, Alberta Environmental Protection	Municipal Government Act, s.7, AEPEA; s.168 to s.178. Regional Municipal Services Act, s.2.
4.4 It is recommended that the municipal waste authorities apply incentives for waste reduction as close to the waste generator as possible, accompanied by public education programs outlining the advantages of user fees;	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.
4.5 that rates for curbside collection of waste be volume-based, with unlimited amounts of designated recyclables collected at no charge;	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.
4.6 that municipalities implementing curbside fees balance the charges with reduced property taxes, and indicate specific charges on utility bills; and	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.
4.7 that municipal waste authorities consider a phase-in period to lessen the impact of volume-based curbside collection.	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.
4.8 It is recommended that municipal waste authorities anticipate the cost of replacing landfill sites by including depletion and post-closure costs in tipping fees;	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.
4.9 that tipping fees be set to recover costs and encourage overall reduction, without penalizing residents and businesses to the extent that it affects the economic well-being of the community;	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.

RECOMMENDATION	JURISDICTION RESPONSIBLE FOR IMPLEMENTATION	IMPLICATIONS AND AUTHORITY
4.10 that the municipalities recognize tipping fees not as a general revenue source but as a cost recovery mechanism which facilitates programs on waste reduction;	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.
4.11 that tipping fees be consistent throughout a region or catchment area to reinforce the concepts of cost recovery and waste reduction; and	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.
4.12 that municipal waste authorities and private operators use differential tipping fees which reflect more accurately the real cost of handling specific wastes, particularly if technologies and programs exist for alternative disposal or recycling.	Municipality	Municipal Government Act, s.7 and s.8; Regional Municipal Services Act, s.2.
5.0 **Reduction Through Recycling** It is recommended that the provincial government look upon waste as a *renewable resource* and provide marketing development programs aimed at identifying and expanding markets for recycled products;	Alberta Environmental Protection, Municipal Affairs	AEPEA s.13, and s.168, and Division 1 of Part 9 provide the authority to implement.
5.1 that both the provincial and municipal levels of government adopt appropriate incentives to assist in the development of a recycling industry;	Provincial Government, Municipalities	AEPEA s.13, and s.168, and Division 1 of Part 9 provide the authority to implement. Municipal Government Act s.7 and s.8.
5.2 that the provincial government replace the Resource Recovery Grant Program with a loan program which earns credit based on documented waste reduction results;	Provincial Government	AEPEA s.13, and s.168, and Division 1 of Part 9 provide the authority to implement.
5.3 that the provincial government expand the use of Recycling Fund to encompass recyclable materials other than tires;	Provincial Government (Alberta Environmental Protection)	AEPEA s.13, and s.168, and Division 1 of Part 9 provide the authority to implement.
5.4 that regional waste management authorities and other stakeholders explore options to cooperatively facilitate collection and/or reduce high transportation costs which might otherwise make recycling programs uneconomical;	Municipality, Provincial Government (Alberta Environmental Protection)	AEPEA s.13, and s.168, and Division 1 of Part 9 provide the authority to implement; Regional Health Authorities Act, s.7; Regional Municipal Services Act, s.2 and s.3; Municipal Government Act s.7.
5.5 that government agencies, such as the Alberta Research Council and others, and private sector research and development and manufacturing firms expand their efforts to develop and market new products from recyclable materials; and	Provincial Government (Alberta Environmental Protection)	AEPEA s.13, and s.168, and Division 1 of Part 9 provide the authority to implement this and the following recommendations.

RECOMMENDATION	JURISDICTION RESPONSIBLE FOR IMPLEMENTATION	IMPLICATIONS AND AUTHORITY
5.6 that all segments of Alberta society be encouraged to establish purchasing practices that stimulate and stabilize markets for recyclable products.	Provincial Government, Municipalities	AEPEA s.13 and s.14 and Division 1 of Part 9; Municipal Government Act, s.7.
6.0 **Product Stewardship** It is recommended that the Government of Alberta work with local industry coalitions to establish a viable model for product stewardship;	Provincial Government (Alberta Environmental Protection)	s.14 and s.168 of AEPEA provide authority to establish these programs
6.1 that provincial and municipal government procurement policies be consistent with the objectives of the National Packaging Protocol and made known to all departments, agencies and institutions;	Provincial Government Municipalities	s.14 and s.168 of AEPEA provide authority to establish these programs; Municipal Government Act, s.7.
6.2 that the private sector be encouraged to establish procurement policies that foster product stewardship;	Provincial Government (Alberta Environmental Protection)	AEPEA, s.14 and s.168.
6.3 that Action on Waste explore involvement in consumer education programs which inform the public of purchasing practices aimed at reducing packaging waste;	Provincial Government (Alberta Environmental Protection)	AEPEA, s.14 and s.168.
6.4 that the Tire Recycling Management Board increase its educational awareness activities among consumers, dealers, municipalities and potential business partners regarding its role, mandate and procedures;	Provincial Government (Alberta Environmental Protection)	AEPEA, s.14 and s.168. (Also the Tire Recycling Management Board Regulations).
6.5 that appropriate levels of government institute an advance disposal surcharge system for unsolicited mail and other wastes over which the recipient has little or no control, and that the Minister of Alberta Environmental Protection bring forward this issue to the CCME as a national concern and to gain inter-governmental support for this recommendation;	Provincial Government (Environmental Protection) Municipalities	AEPEA, s.13 and s.14; Division 1 of Part 9; Municipal Government Act s.7 and s.8.
6.6 that the provincial government expand beverage container recovery depot services to other pilot projects to capitalize on the existing infrastructure in a cost-effective manner; and	Provincial Government (Alberta Environmental Protection)	AEPEA, s.14 and Division 1 of Part 9.
6.7 that provincial regulations should ensure a "level playing field" for the Alberta industry without the imposition of penalties that might impede the capacity to sell or export materials.	Provincial Government (Alberta Environmental Protection), Municipalities	AEPEA, S.13 and s.14, and Division 1 of Part 9; Municipal Government Act, s.7 and s.8.

RECOMMENDATION	JURISDICTION RESPONSIBLE FOR IMPLEMENTATION	IMPLICATIONS AND AUTHORITY
7.0 **Jurisdictional Responsibility for Waste Management Systems** It is recommended that roles and responsibilities for waste among Alberta government departments be more clearly defined to avoid duplication, overlap and conflict;	Provincial Government (Ministers of Alberta Health, Alberta Environmental Protection and Municipal Affairs)	AEPEA, s.2, 10, 11 and 14; Regional Health Services Act, s.7; Regional Municipal Services Act, s.2, and 3; Municipal Government Act s.7.
7.1 that Alberta Environmental Protection, Alberta Health and Municipal Affairs continue working with municipalities and Regional Health Authorities to promote and advance waste minimization initiatives;	Provincial Government (Ministers of Alberta Health, Alberta Environmental Protection and Municipal Affairs) Municipalities	AEPEA, s.2, 10, 11 and 14, Regional Health Services Act, s.7; Regional Municipal Services Act, s.2 and 3; Municipal Government Act, s.7.
7.2 that waste management facilities be developed and operated to specific standards throughout a region or catchment area, ensuring a measure of control on what is being disposed of where; and	Provincial Government (Ministers of Alberta Health, Alberta Environmental Protection and Municipal Affairs) Municipalities	AEPEA, s.13,14 and 34, Regional Health Services Act, s.2 and s.3; Regional Municipal Services Act, s.7; Municipal Government Act, s.3 and s.7.
7.3 that Alberta Environmental Protection continue activities within the Canadian Council of Ministers of the Environment, particularly as they relate to harmonization of goals and services among and within all levels of government.	Provincial Government (Minister of Alberta Environmental Protection	AEPEA, s.12, s.14, and s.20
7.4 It is recommended that public health remain the highest priority for waste management;	Provincial Government (Minister of Alberta Health)	s.7, Regional Health Authorities Act.
7.5 that the roles of the newly-established Regional Health Authorities and their environmental health officers/public health inspectors be clearly defined in relation to waste management authorities;	Provincial Government (Minister of Alberta Health)	s.7, Regional Health Authorities Act, s.2 Regional Municipal Services Act and Municipal Government Act s.3 and 7.
7.6 that municipal waste managers, in association with health authorities, develop guidelines which mitigate public health risks of controlled, on-site salvaging and scavenging operations.	Provincial Government (Minister of Alberta Health)	s.7, Regional Health Authorities Act, s.2 Regional Municipal Services Act and Municipal Government Act s.3 and 7.

APPENDIX 6

GLOSSARY OF TERMS

Blue Box refers to a type of collection system for recyclable goods, based on home/curbside pick-up of materials, regardless of the colour of the box used by the municipality.

Catchment Area in this context of waste management, refers to the region served by a Regional Waste Management Authority or municipality.

CIPSI (Canadian Industry Packaging Stewardship Initiative) is a packaging stewardship model developed by the Grocery Products Manufacturers of Canada (GPMC) which aims to divert 50 per cent of packaging waste by the year 2000 by integrating reduction, reuse and recycling approaches to managing waste.

Economic Instruments are policies that alter the prices faced by producers and consumers. By adjusting prices to encourage behaviour that reduces solid waste, economic instruments could offer potential to encourage reduction, reuse and recycling of waste currently being landfilled. Although economic instruments are often discussed as an alternative to "regulation", they require some legislation and regulations for their creation. They are, in fact, a less direct form of regulation, with the potential to allow more scope for initiative on the part of the persons regulated, and to provide financial rewards for those who exceed the minimum standards.

4Rs (Reduce, Re-use, Recycle, Recover), as accepted in Alberta, refer to the hierarchy of waste management based on the effectiveness with which waste is reduced.

Full-cost accounting is a suggested method of accounting for a project which takes into consideration start-up costs, resources (human resources, equipment, supplies, etc.), training costs, health and safety, quality assurance / quality control, closure and monitoring costs.

Ground Water means subsurface water located in the saturated zone of the earth including all water in confined, unconfined or perched conditions in near surface, unconsolidated sediment or in rock formations.

ICI refers to the portion of the waste stream produced by the industrial, commercial and institutional sectors.

Inert Waste means any solid waste that, when placed in a landfill, is not reasonably expected to undergo physical, chemical and/or biological changes to such an extent as to originate substances which may have a negative environmental impact.

Landfill means a natural and/or engineered site where wastes are deposited on land, confined to the smallest practical area, compacted, and covered with soil on a frequent basis.

Leachate means liquid which has percolated through or drained from solid waste and contains dissolved, suspended or microbial contaminants.

Lifecycle is a series of stages that characterize the course of existence of a manufactured product. Lifecycle analysis of a product traces the use and disposal of a product from "cradle to grave".

Municipal Solid Waste includes wastes such as durable goods, non-durable goods, containers and packaging, food wastes, yard wastes, and miscellaneous inorganic wastes from residential, commercial, institutional, and industrial sources. Examples of waste from these categories include appliances, newspapers, clothing, food scraps, boxes, disposable tableware, office and classroom paper, wood pallets, and cafeteria wastes. MSW does not include wastes from other sources, such as municipal sludges, combustion ash, and industrial non-hazardous process wastes that might also be disposed of in municipal waste landfills or incinerators. [Source: USEPA, 1990. Sentar/Cashion: Alberta Recycling Markets Study 1993 p. E1.]

MRF (Materials Recovery Facility) is a facility where recyclable materials are sorted and prepared for transport.

NIMBY Syndrome (Not In My Backyard) describes the resistance to the establishment of new landfill sites by residents who live near the proposed site.

PET (polyethylene terephthalate) the material used to make plastic soft drink bottles.

Polluter pays principle states that those who cause the environmental damage bear its cost.

Product Stewardship refers to industry taking responsibility for the products and packaging it produces. An example of stewardship within a limited scope is the bottle deposit/return system in place in the soft drink industry

Recover involves extracting usable energy from residual waste materials.

Recyclable is an item or material which may be recycled given appropriate technology, economics, supply and demand.

Recycle is a process which involves collecting a used material and reprocessing it into a usable product.

Reduction refers to activities that result in less waste being generated prior to any reuse or recycling activities.

Re-use means that a product or package in its original form is used for its original purpose or a different purpose.

Reverse Distribution is a system where the consumer would return packaging material to the place of purchase. Reversing the process in which products were initially delivered to the retail place, the packaging would be collected by the retailer, transported by the distributor back to the manufacturer.

CONVERSION FACTORS

Approximate weight of 1 cubic metre of:

Newspaper	300 kg
Office paper	300 kg
Corrugated cardboard (flattened)	90 kg
Tin cans (flattened)	120 kg
Glass containers (some breakage)	360 kg
Plastic containers	12-25 kg

A standard 30 cubic metre roll-off bin will hold:

Newspaper	9,000 kg
Office paper	9,000 kg
Corrugated cardboard (flattened)	2,700 kg
Tins cans (flattened)	3,600 kg
Glass containers (some breakage)	10,800 kg
Plastic containers	360-750 kg

Metric Conversions:

1 cubic metre = 1.31 cubic yards
1 tonne = 1.10 tons
1 kilogram = 2.20 lbs.
1 metre = 3.28 feet

APPENDIX 7

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Sandra Nydokus, Environment Council of Alberta:
Pages 6, 55 and 64

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Our Forgotten Resource –
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